ENGINEERING NEWS-RECORD

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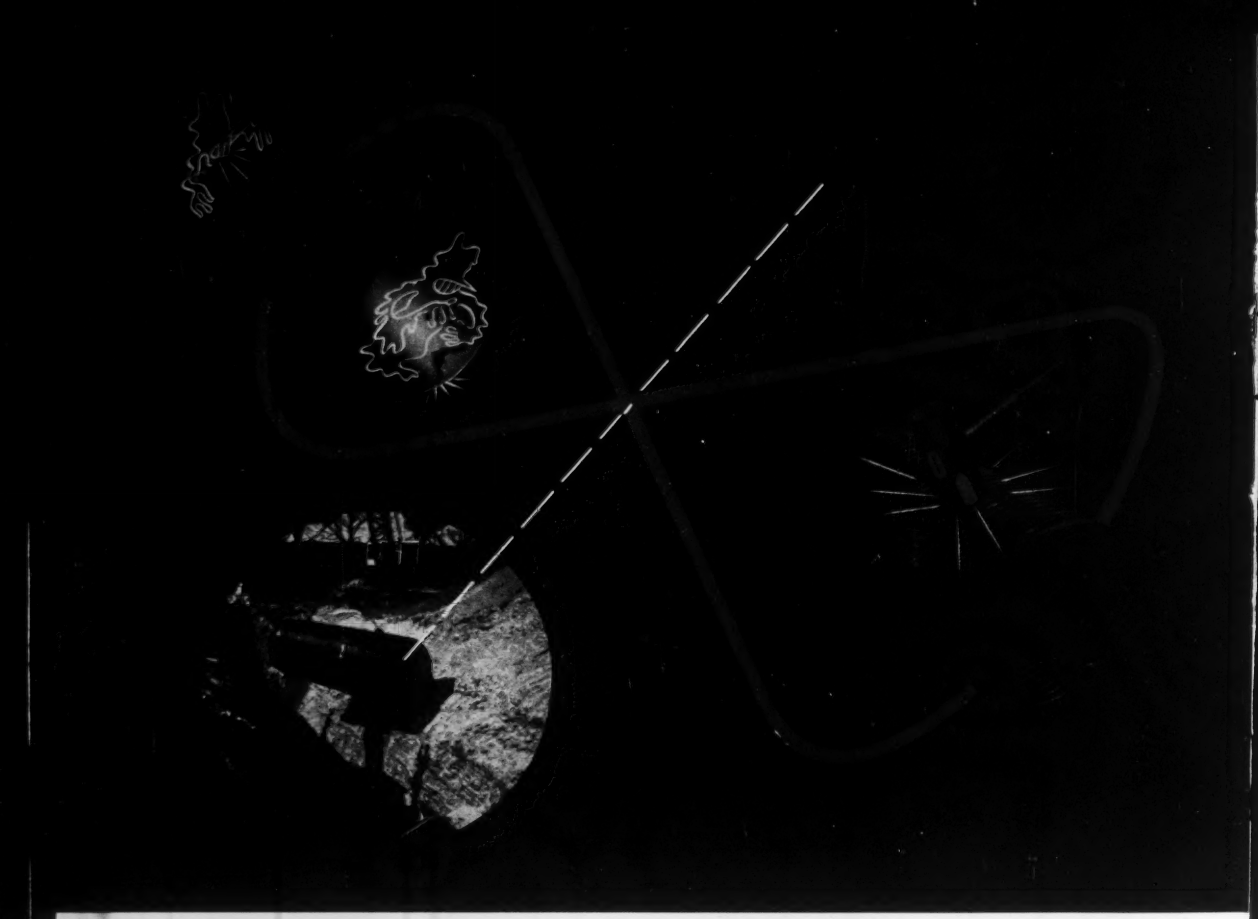

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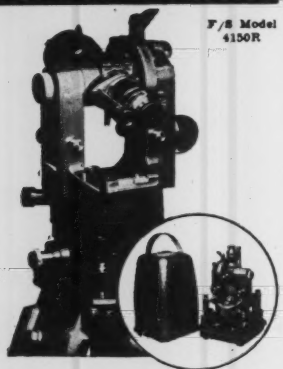

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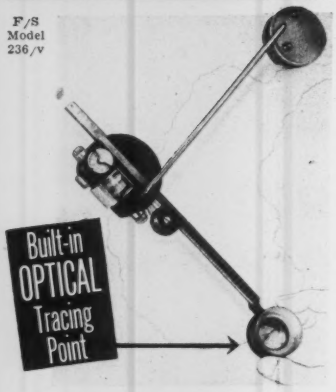

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Volume 149 November 6, 1952 No. 19

WALDO G. BOWMAN
Editor

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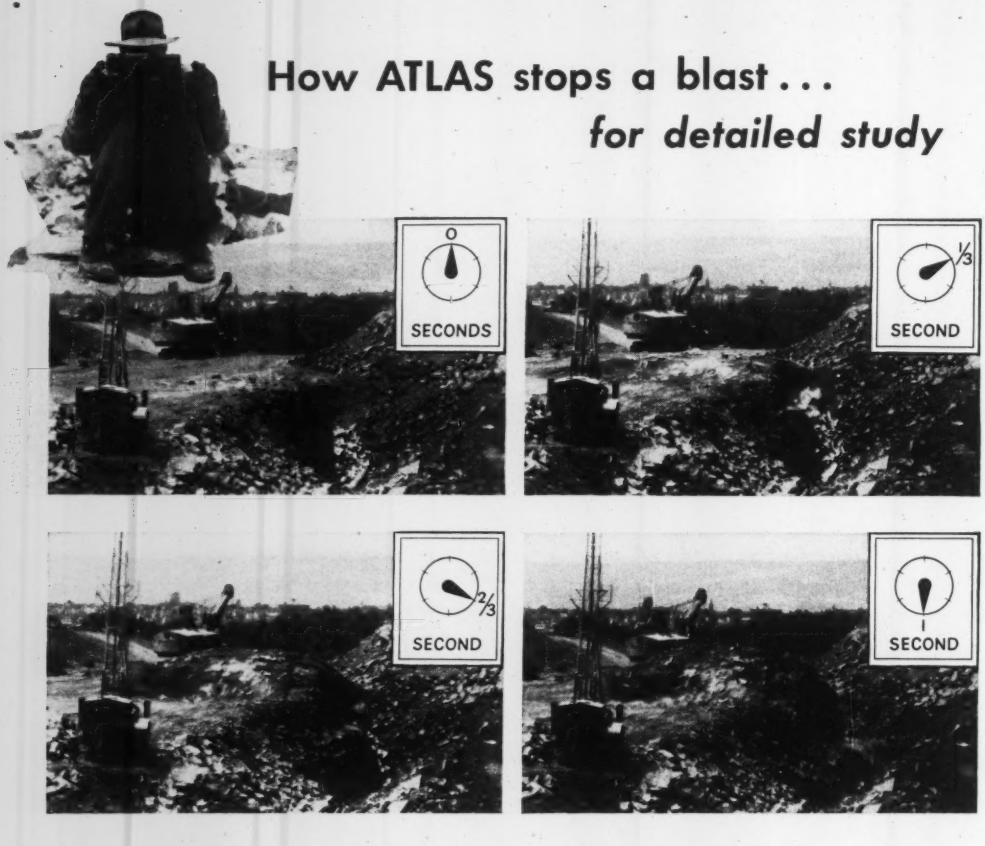

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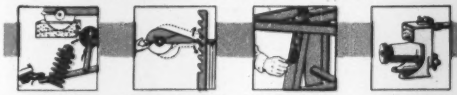

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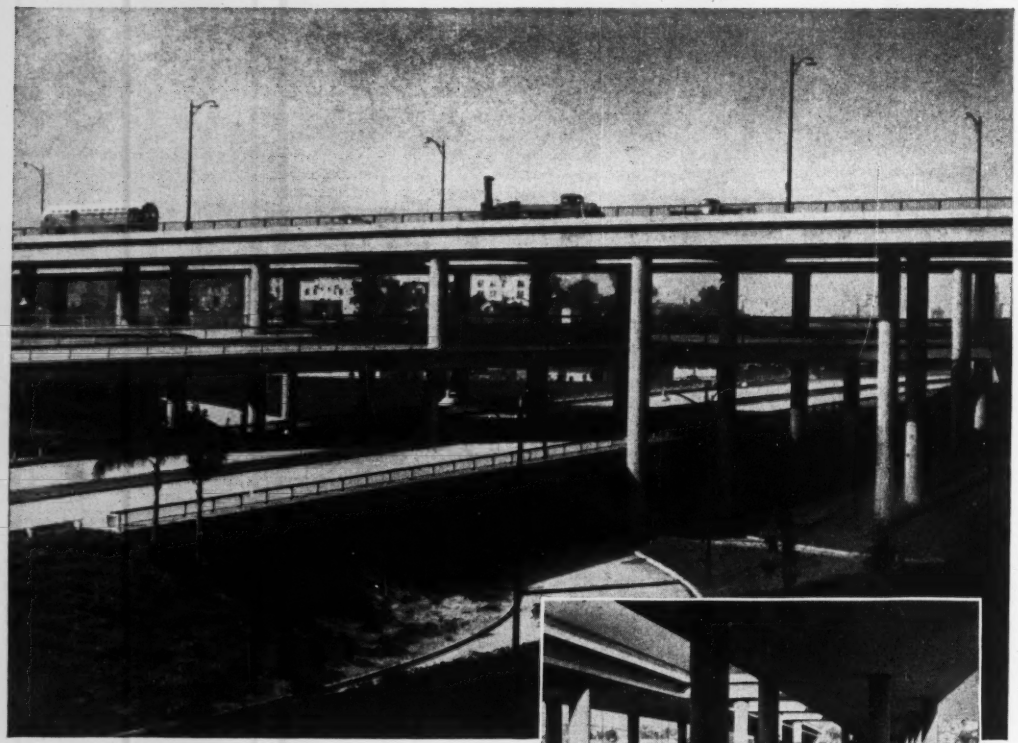

4-level *CONCRETE* structure solves intersection problem on Los Angeles' great freeways

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Additional information on concrete structures for modern highways is available in two publications, "*Continuous Concrete Bridges*" and "*Continuous Hollow Girder Concrete Bridges.*" Both are free but distributed only in U. S. and Canada.

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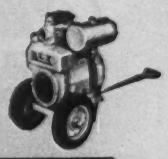

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READER COMMENT

Short-cut to maturity

Sir: With the existing shortage of engineers in both government and industry, a short-cut to professional maturity for the beginner in the field must be found if the technical progress of the country is not to be seriously hampered. His capabilities must be utilized to the fullest without undue delay.

The most effective method of accomplishing this is to move the young engineer into a position of authority as soon as he is ready for it. How soon he is ready depends, of course, largely upon himself, but not solely, however. A frequently forgotten factor in his development is the role played by the more experienced engineer under whom he works.

This experienced supervisor should be an *accomplished* engineer, truly a creator of new methods and items. With this background he is in a position to provide the readiest short-cut to professional maturity for his younger engineering brother.

Most engineers agree that there is no substitute for experience. The amount of time required to gain experience, however, varies with the type of training obtained in a particular office.

A young man in one office progresses as fast as he is able to absorb the various duties, while in another an engineer of equal ability progresses at a snail's pace. The difference is usually due to the kind of help provided.

This help begins by finding the proper niche for the young engineer. Although many conscientious corporations follow an elaborate system of determining where a man will do himself and the company the most good, others often neglect this all-important first step. If aptitude tests are not provided, a long, carefully planned discussion with a mature, creative engineer is mandatory. After receiving his assignment, the new engineer must be made to feel free to discuss his problems as they occur.

In his contact with the new engineer, the more experienced man should employ the art of salesmanship. By selling himself he is better able to make the newcomer willing to listen, willing to try the proven method, and thus surmount the highest hurdle found in the earliest stages of training. He should try to get across to the beginner that much is to be learned by comparing and evaluating the previous approaches made to the problem. The sooner the young man is persuaded to listen, the quicker he can be given a position of responsibility.

Another thought that the guiding engineer should instill is that errors made during the first stages of training are usually of small consequence. They should be passed over quickly so that they do not detract from the over-all training program.

Errors in engineering, like errors in other fields of endeavor, are as a general rule not made because of lack of knowledge but because of carelessness or forgetfulness. A set of procedures established by the mature engineer for the young graduate to follow can reduce errors to a minimum.

In organizations employing a large number of project engineers the proper guidance of groups of newcomers by a more experienced engineer results in getting more out of the individual. The older engineer, freed of the routine paper work that normally consumes a large portion of the engineering administrator's time, can give more time to orienting and teaching. This also makes him largely responsible for the progress made.

The young engineer has all too frequently been left to his own devices, giving him a sense of importance undeserved and unsupported by accomplishment. It is a mistake to give him his freedom too quickly, lest he only go through the motions of getting a job done without creating a serviceable item or method.

It is up to the experienced engineer to bring the newcomer along, imparting to him procedures that lead to the creation of new superior equipment. Only in this way can the ever-increasing demands placed on the engineers of this country be met.

KENNETH L. TREIBER
Hydraulic Consultant
Engineer Research & Development Laboratories
Fort Belvoir, Va.

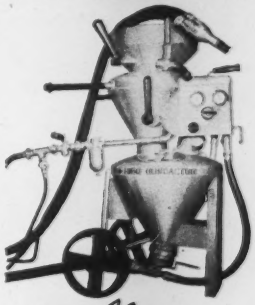
Building course available

Sir: I read with great interest the report of an address by Tyler S. Rogers of Owens-Corning Fiberglas Corp. in ENR, July 10, p. 32.

I agree with Mr. Rogers that much more attention should be given to a thorough training of young men for the construction industry. However, I believe that this training must be fundamental and cannot be given without intimate association with the basic engineering sciences. No school,

(*Continued on page 15*)

Does a Better Job... Pays for Itself in SAVINGS...



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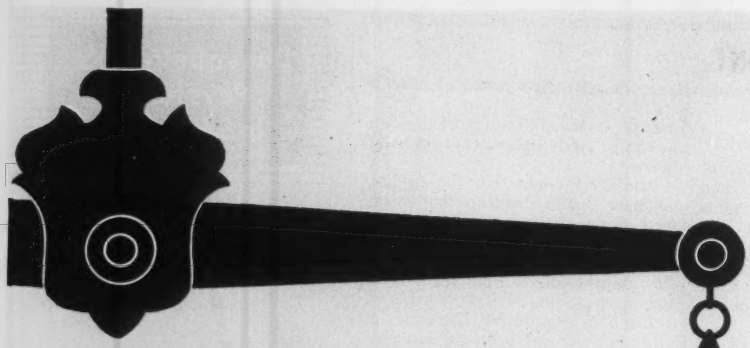

pound for pound ...more value!

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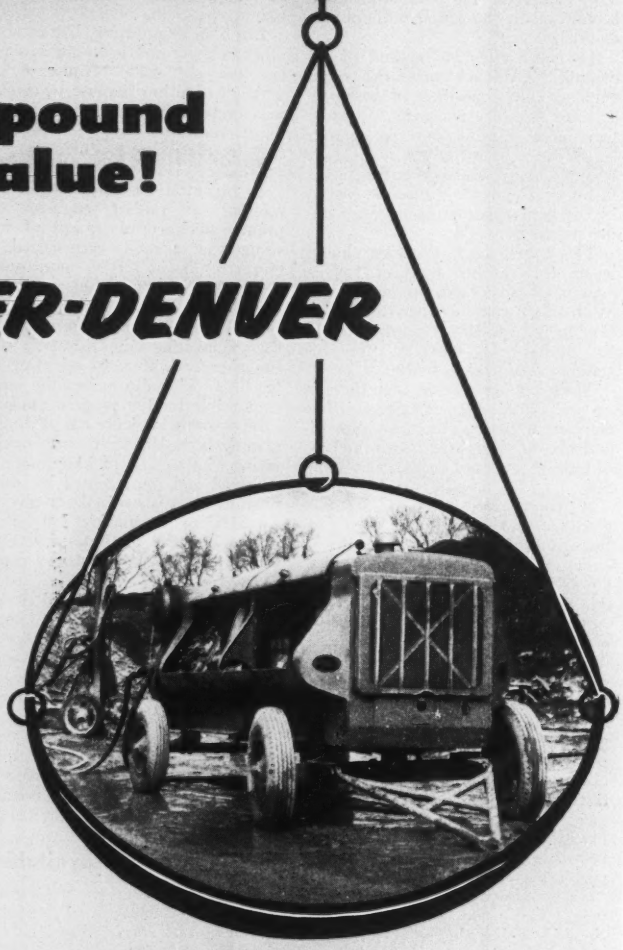

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THE QUALITY LEADER IN COMPRESSORS, PUMPS AND ROCK DRILLS

(Continued from page 13)
academic or otherwise, can train its students for specific tasks which are to be performed in the future. Our ever-changing economy, science and technology will see to it that graduates will be faced with problems that cannot be foreseen.

The only way to equip these men to deal with the situation is to give them the training in the basic sciences and ability to apply this knowledge to their chosen profession. This includes not only the basic sciences but also a goodly amount of structural engineering and training in writing and speaking the English language.

The Department of Building Engineering and Construction at Massachusetts Institute of Technology since 1926 has been giving training in accordance with the program outlined above. I am sure that if Mr. Rogers meets some of our graduates, he will agree that they have been getting the sort of training which he desires.

About 300 engineers have been graduated from this department in the last 26 years. They are holding positions of high responsibility in many phases of building construction and engineering. The low rate of men lost to other fields proves that the department is on the right track.

It is, of course, agreed that no strictly structural training is complete until it has been augmented by thorough instruction in the fields of building materials, construction methods, labor relations and construction management.

The department has published a booklet that describes in general the education offered for the construction industry.

WERNER H. GUMPERTZ
Asst. Professor of Building Construction, Massachusetts Institute of Technology
Cambridge 39, Mass.

CALENDAR

Structural engineering conference, University of Illinois, Urbana, Nov. 12-14.

Building Research Advisory Board, conference on Housing and Building in Hot-Humid and Hot-Dry Climates, National Academy of Sciences, Washington, D. C., Nov. 18-19.

Inter-American Association of Sanitary Engineering, conference, Buenos Aires, Argentina, Nov. 19-30.

Society for Experimental Stress Analysis, Hotel McAlpin, New York City, Dec. 3-5.

American Association of State Highway Officials, annual meeting, Municipal Auditorium, Kansas City, Mo., Dec. 10-12.

Illinois traffic engineering conference, University of Illinois, Urbana, Dec. 11-12.

Only ROGERS TYPE "TPG" Power Lift
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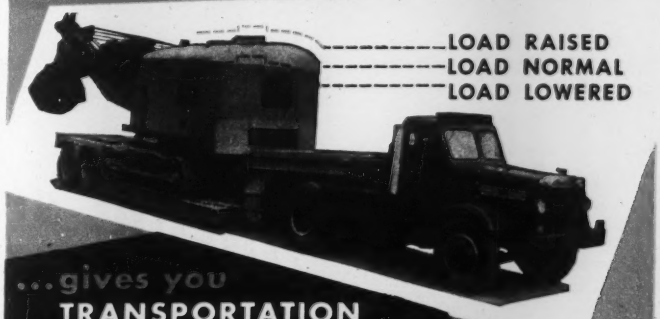

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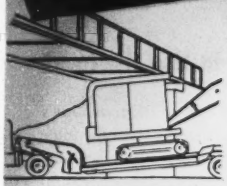
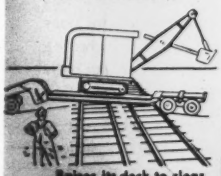
plus...
LOAD MANIPULATION


Stoops to clear low overhead obstructions.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The unique deck raising and lowering feature of this Rogers trailer makes load manipulation a distinct advantage under many hauling conditions.

Low bridge or high road bed obstacles are easily overcome. Deck is raised or lowered to alter overall height of load for overhead clearance. Raising deck clears high road beds.

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EXPERIENCE builds 'em — PERFORMANCE sells 'em

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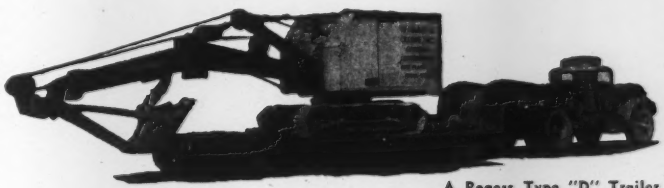
A Rogers Type "D" Trailer

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'INCOR' SPEEDS COLD-WEATHER CONCRETING of Hudson River Pier Extension

'Incor' Concrete Placed One Day, was in Use the Next

● To speed ship turn-around, widening and lengthening of Belgian Line's Pier 14, on New York City's North River, had to be pushed straight through last Winter. J. RICH STEERS, INC., Contractor, took frosty winds and icy spray in stride, by relying on the dependable high early strength of 'INCOR' AIR-ENTRAINING* 24-HOUR CEMENT. Extra workability speeded placing . . . with minimum heat protection, 'Incor' gained service strength, was safe from freezing, days sooner than ordinary concrete would have been . . . incoming freight was unloaded on 'Incor' concrete 24 to 48 hours after placing.

ADDITION TO PIER 14, NORTH RIVER
NEW YORK CITY

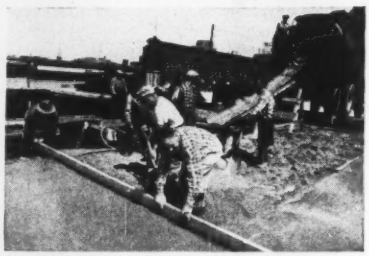
Owner:
CITY OF NEW YORK

Lessee:
ATLANTIC OVERSEAS CORP.
New York City

Contracting Engineer:
J. RICH STEERS, INC., New York City

Ready-Mix Air-Entrained 'Incor' Concrete:
RYAN READY-MIXED CONCRETE CORP., Brooklyn, N. Y.

Performance like this explains why so many leading contractors rely on America's FIRST high-early-strength portland cement where the going is tough—and wherever maximum speed means minimum cost, as it almost always does.



'INCOR' AIR-ENTRAINING 24-HOUR CEMENT was used for 11' concrete apron, extending 500' on south side of Pier 14, North River, and for 177' pier extension. In mid-Winter, with minimum heat protection, freight was unloaded on 'Incor' concrete 24 to 48 hours after placing.

* For useful information about Air-entrained Concrete, write for 36-page illustrated booklet, "Lone Star Air-Entraining Cements." Address Lone Star Cement Corporation, 100 Park Ave., New York 17, or nearest Lone Star office, listed below.

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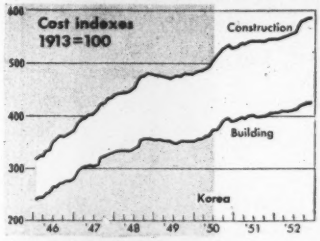
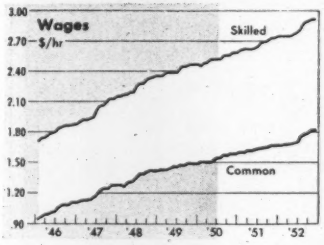
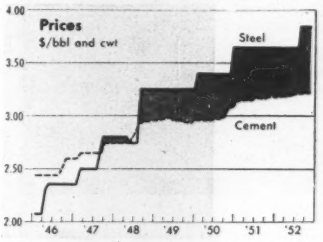
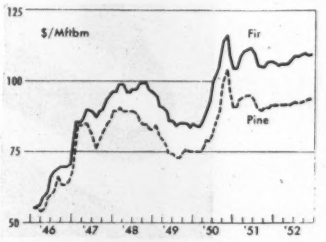
LONE STAR CEMENT, WITH ITS SUBSIDIARIES, IS ONE OF THE WORLD'S LARGEST CEMENT PRODUCERS: 17 MODERN MILLS, 125,600,000 SACKS ANNUAL CAPACITY

NOVEMBER CONSTRUCTION SCOREBOARD









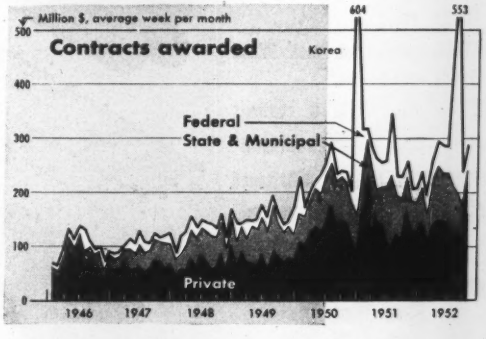
ENR INDEXES (1913 = 100), 20-cities' average	1952 November	% Change from last Month	% Change from last Year
Construction Cost	588.61	+0.03	+ 7.6
Building Cost	426.04	+0.3	+ 5.3
WAGE RATES, 20-cities' average			
Common	$1.817	0.0	+10.4
Skilled (aver. 3 trades)	2.937	+0.5	+ 7.7
Bricklayers	3.236	+0.5	+ 7.9
Structural Ironworkers	2.863	+0.5	+ 6.7
Carpenters	2.687	+0.7	+ 8.4
MATERIAL PRICES, 20-cities' average			
Cement, bulk, per bbl	$3.219	0.0	+ 1.6
Structural Steel, (3-mill aver.), per cw	3.850	0.0	+ 5.5
Sand, per ton	2.108	0.0	+ 0.9
Lumber, 2x4 Fir, per M. ft. bm	109.639	+0.2	+ 2.2
Lumber, 2x4 Pine, per M. ft. bm	93.433	+0.3	+ 1.9
Common brick, per M	31.601	0.0	+ 1.6
Ready-mixed concrete, per c. y	11.305	+0.2	+ 3.7
Structural Clay Tile, 3x12x12 per M	151.350	0.0	+ 1.1

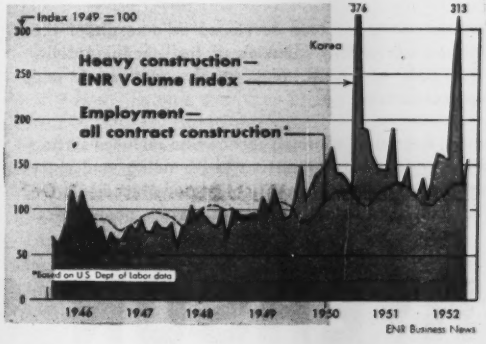
CONTRACTS AWARDED (Millions)	1952 Oct. 5-Weeks#	10-Mos. 44-Weeks#	% Change from '51 Oct. 4-Weeks#	10-Mos. 43-Weeks#
Total U. S. (ENR reported)	$1,446.4	$13,702.4	+12.7	+13.9
Private	788.0	5,918.4	− 3.5	− 8.2
Public	658.4	7,784.0	+40.9	+39.5
Federal	244.1	4,219.5	+75.3	+102.4
ENR Volume Index, '13 = 100	540	599	+ 5.7	+ 9.7
NEW CAPITAL (Millions)				
Total	676.6	14,315.5	−69.2	+26.7
State & Municipal Bond Sales*	187.7	2,574.1	−35.2	+25.9
Corporate Security Sales	475.3	3,285.2	+70.3	+12.7
Federal (non-federal work)	13.6	869.4	−96.9	+23.4
Federal (federal work)	.....	7,586.8	−100.0	+34.7

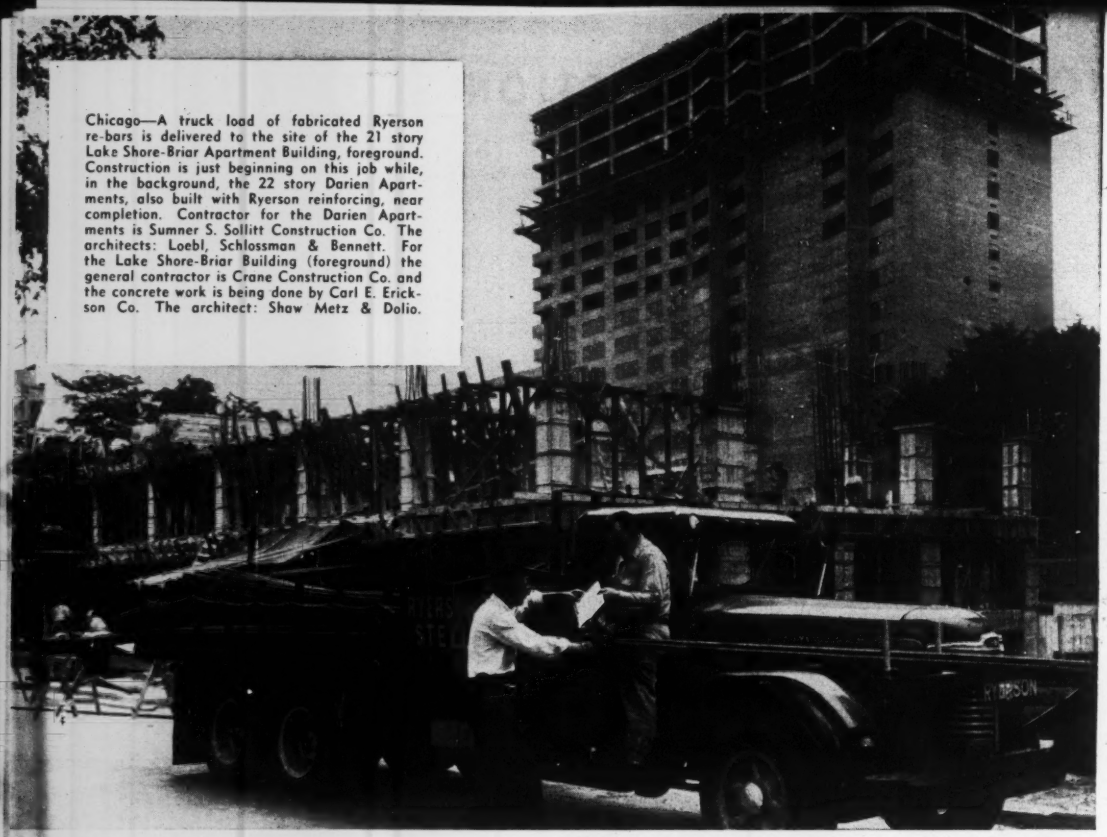
* Excluding public housing.
\# Computed on Weekly Average.

MATERIAL SHIPMENTS & LABOR SUPPLY (Millions)	1952 Aug.(A) Sept.(S)	8-Mos. (8) 9-Mos.(9)	% Change from '51 Mo.	Yr.-Cum.
Cement, bbls, Bu. of Mines	25.915(A)	164.163(8)	+0.3	+1.3
Fabr. Struc. Steel, tons AISC	226(S)	1.951(9)	−0.8	−4.4
Lumber, mil. ft. bm., NLMA	3.305(A)	24.466(8)	+2.3	−4.4
Lumber Prod., mil. ft. bm., NLMA	3.398(A)	24.747(8)	−5.2	−7.3
Contract Constr. Employ., BLS	2.747(S)	2.530(9)†	−0.7	−0.7

† Average.







Chicago—A truck load of fabricated Ryerson re-bars is delivered to the site of the 21 story Lake Shore-Briar Apartment Building, foreground. Construction is just beginning on this job while, in the background, the 22 story Darien Apartments, also built with Ryerson reinforcing, near completion. Contractor for the Darien Apartments is Sumner S. Sollitt Construction Co. The architects: Loebl, Schlossman & Bennett. For the Lake Shore-Briar Building (foreground) the general contractor is Crane Construction Co. and the concrete work is being done by Carl E. Ericksson Co. The architect: Shaw Metz & Dolio.

Two More Big Jobs Rely on Ryerson Re-Bar Service

Contractors for these two ultra-modern apartment buildings —*and hundreds more builders from coast-to-coast*— take advantage of Ryerson construction steel service to help start jobs fast and stay on schedule.

Though some shortages have developed as a result of the steel strike, you can usually count on us for scheduled deliveries of the bars you need, plus spirals, wire mesh and reinforcing accessories.

Time-saving Ryerson reinforcing service also includes setting plans, when desired, accurate cutting and bending, and every piece metal-tagged for quick identification and placement. On your next job call on us for a lump sum or average pound price.

CONSTRUCTION STEELS IN STOCK

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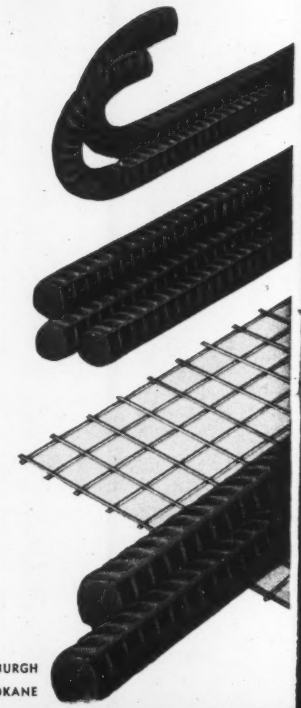

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PHILADELPHIA • BUFFALO • NEW YORK • BOSTON • ST. LOUIS • LOS ANGELES • SAN FRANCISCO • SEATTLE • SPOKANE

- **Snag on St. Lawrence**—Approval by the International Joint Commission doesn't mean smooth navigation from here out for the St. Lawrence Seaway plan.

  There's a nasty snag in the stream—an old, sharp-toothed snag that's been in the same spot for years. It concerns the naming of a U. S. agency to work with an opposite number in Canada.

  What IJC did (see also p. 23) was take a necessary step in approving the applications of the U. S. and Canadian governments to build the power elements that are an integral part of the development plan. Canada has already named the Hydro Electric Power Commission of Ontario to do the job on the Canadian side.

  But in the U. S., one state and several federal agencies are vying for the work. One of these, the New York State Power Authority, has already applied to the Federal Power Commission for permission to go ahead. Action on the application has been held up pending IJC action.

  Another factor, of course, is politics. The current Administration hasn't looked kindly on New York's efforts to get the power work and distribution lines—would rather see the Army Engineers or Reclamation Bureau handle the job. If the FPC should grant New York the license, many legal experts believe the state would hold prior rights that can't be upset by any act of Congress.

  Meanwhile, Canada is going ahead with its own plans for an all-Canadian seaway—even though that scheme can't be carried through until some U. S. agency gets full authority to build the dams that will extend into New York State.

- **Dark side of drought**—With continuing lack of rainfall in the Pacific Northwest, as predicted (ENR Oct. 2, p. 19) restrictions of power use have gone into effect under Defense Electric Power Administration orders. Utilities in an area covering Washington, parts of Oregon, Idaho and Montana are directed to integrate their systems for most efficient use of power. Beginning Nov. 17, consumers of firm power will be restricted to 90% of the amount they used last year during the same period.

  Background: Rainfall is away off normal. The area is worse off for water power now than it was a year ago, no relief in sight.

- **Bright side of drought**—But the drought and resulting power curtailment had a bright side too. It might ease currently strained relations between the U. S. and Canada over aluminum.

  The U. S. government announced it will "borrow" some 77,000,000 lb. of the metal from Britain's Canadian orders, to offset losses due to the power brownout. Britain will waive delivery of that amount from Aluminum Co. of Canada.

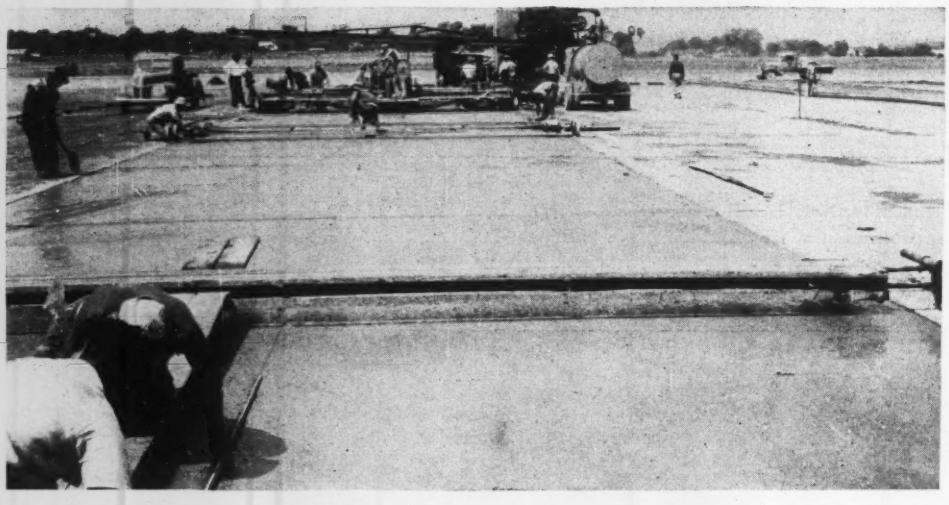
  Long-range result may untangle this situation (ENR Oct. 9, 1952 p. 19). Canada has been miffed by previous refusal of the U. S. to take aluminum, feared for the economic health of Alcan's huge plant now building at Kemano. As a result, Canada has been accused of dragging its feet on approval of U. S. aluminum development in Alaska, where headwaters are in Canadian territory.

- **Who's suing whom?**—Hearings have started in U. S. District Court, Los Angeles in Navy's suit against two water-user groups at Fallbrook, Calif. (ENR May 22, p. 19).

  Officially, the Navy is suing to establish riparian rights on the Santa Margarita River for its huge Pendleton Marine Base. In fact, the Navy itself is on trial before angry Californians, who see a threat to state control of waterways.

  Background: When the Navy bought the camp site in 1943, it said it had acquired prior water rights over local agencies, started court action against local users to prove it. Such an uproar resulted that California Congressmen got a bill through the House to authorize a $23-million dam for supplemental water storage, but the bill died in the Senate. And Senators tacked a rider on to a Justice Department appropriation bill forbidding use of Justice funds for the suit. Justice asked Navy to carry on, which it is doing, despite a ruling from the U. S. Comptroller General that it shouldn't.

Here's photo proof that DURAPLASTIC* minimizes bleeding and segregation



● This picture of finishers working so closely behind the paver is clear evidence that Atlas Duraplastic air-entraining portland cement minimizes bleeding and segregation in concrete paving mixes.

Experience proves, too, such concrete is fortified against freezing-thawing weather and the scaling action of de-icing salts.

Duraplastic-made concrete requires less mixing water for a given slump. The mix is more plastic, more cohesive and more uniform. It dumps, spreads and finishes easily...allows earlier protection for curing.

YET DURAPLASTIC COSTS NO MORE

It sells at the same price as regular cement and requires no unusual changes in procedure. Complies with ASTM and Federal Specifications. For descriptive booklet, write Universal Atlas Cement Company (United States Steel Corporation Subsidiary), 100 Park Avenue, New York 17, New York.

OFFICES: *Albany, Birmingham, Boston, Chicago, Dayton, Kansas City, Minneapolis, New York, Philadelphia, Pittsburgh, St. Louis, Waco.*

*"*Duraplastic" is the registered trade mark of the air-entraining portland cement manufactured by Universal Atlas Cement Company.* ENR-D-133RR

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Makes Better Concrete at No Extra Cost

"THE THEATRE GUILD ON THE AIR"—*Sponsored by U. S. Steel Subsidiaries—Sunday Evenings—NBC Network*

NPA clings to controls, plans concessions

A six-man task force of the Construction Industry Advisory Committee went to Washington, D. C., last week. They were seeking an immediate relaxation of Controlled Materials Plan restrictions, suspension of controls by Jan 1, and the end of CMP by April 1.

After a three-hour session with officials of the National Production Authority, they won these concessions:

1—CMP ticket holders entitled to materials in one quarter will soon be able once again to use them in later quarters. NPA is expected to issue an order on this shortly.

2—Self authorization allowances will be increased—probably by Jan. 1—to permit more construction of buildings that require 25 tons of structural steel or less.

3—Advance allotments will be issued soon for the second and third quarter of next year to permit more preliminary planning.

These concessions fell far short of what the task force was seeking.

• **More delays seen**—The task force consisted of H. C. Turner, Jr., president of Turner Construction Co.; C. W. Mosely, vice president of R. H. Bouligny, Inc.; James M. Straub, president of the Fort Pitt Bridge Works; Wray M. Scott, president of Wray M. Scott Co., Inc.; J. E. Merrion, president of the J. E. Merrion Construction Co.; and A. W. Gilmore, head of the Building Materials Division of General Electric.

They had carefully prepared evidence showing that, except for wide flange beams, there is plenty of material in warehouses and in fabricators' shops right now to let small projects go ahead; and structural steel for big jobs is easing at the mills (ENR Oct. 23, p. 21). On the basis of this evidence, they asked for rapid decontrol.

NPA officials, headed by R. B. Newman, who presided at the meeting as NPA assistant administrator in charge of the Facilities and Construction Bureau, were willing to discuss the supply situation. Their pencil work showed that the supply of steel is tight and will remain tight through the first and second quarters of next year. But discussion of complete decontrol was ruled out of order.

As a compromise, NPA offered to recommend Jan. 1 as the effective date for relaxations already promised, but recently postponed until May. Officials said that, under the rules, the task group has to carry its recommendation for complete materials decontrol back to the full committee.

So there will no reappearance of that prickly subject around NPA conference tables until January, when the next meeting with the CIAC is scheduled. Jan. 28 was selected to avoid the hotel crush around the Presidential inauguration date, Jan. 30.

The task force pushed hard for prompt NPA action on the backlog of project applications already filed. Owners and builders need project authorizations and advance allotments of materials, it was explained, in order to plan and schedule work for next year. NPA officials agreed on that need. The agency now has 610 applications awaiting action in the commercial-municipal-religious field and 231 for industrial projects.

During the third quarter of this year, NPA authorized construction starts for 500 commercial, religious, municipal, and entertainment projects, valued at almost $100 million. This was a drop from the previous quarter's 1,662 projects with an estimated cost of more than $626 million.

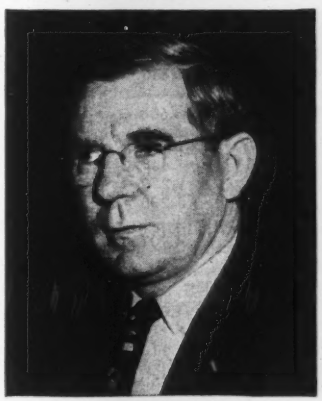
About 50% of the projects authorized will receive their metal allotments in the fourth quarter of this year; 40% in the first and second quarters of 1953; the remaining 10% had received materials during the third quarter of this year.

Defense construction plans reshuffled

By Vin Smith
Washington staff

Money requests for military public works construction next year may be cut 25% below the $3-$4 billion that Defense Department budgeters have been talking about.

The cut won't mean any noticeable reduction in volume of new contract awards for military and naval construction during the fiscal year starting next July 1. Carryover money on hand at the start of the year will assure no slackening in the programmed rate of planning and construction awards for new military public works.



FRANK R. CREEDON tackles a tough job for military construction.

Such cuts as can be made in appropriation requests will come largely from the work being done by the Defense Secretary's new director of installations and his staff. Frank R. Creedon took a small but able crew with him to the Defense Department when he moved there from NPA's Facilities and Construction Bureau at the end of August.

Some real digging has been done by Creedon's crew in the last two months. By the end of this week they will know exactly where the three military services stand on their construction programs. Further, the installations director will have a complete project-by-project schedule from each service telling when contracts are to be awarded—and why delayed projects are not yet under construction.

Part of the story is revealed in the accompanying table. For the first two years after Korea, Congress voted more than $6.5 billion of cash for military public works. During those two years, the military services obligated—awarded contracts for—some $3.6 billion of that construction money.

For the current fiscal year, Congress added more than $2.1 billion of cash to the military construction pot. With this new money, the services had over $5 billion for new construction.

• **Lag cited**—Aims and ambitions of

the three military branches have run well ahead of their performance. The Air Force, for example, told Congress it planned to award construction contracts at a rate of $250 million a month this year. Awards for the first two months are not a fair measure of what the year's accomplishment will be, but the average for July and August was less than $120 million a month.

Looking at a bigger span of past performance, the Air Force has averaged $104 million in construction contract awards since Jan. 1. To any hard-bitten construction man, it is perfectly obvious that this rate cannot be stepped up to an average of $250 million a month for the current year. The Air Force will do well to average $160-$175 million a month.

In the same eight-month period since Jan. 1, the Army has averaged $45 million a month in contract awards. The Navy, with a smaller program, has done better, averaging $47 million a month. In fact, the Navy is more nearly up to date than either of the other services in its public works schedule (ENR Sept. 4, p. 74).

There are factors to account for part of the delay. For example, the Air Force has not been able to convince the Secretary of Defense and the Budget Bureau that it needs a complete telephone communications system for its bases. And the $133-million military hospital program could not get going until President Truman gave his approval about the first of September (ENR Aug. 21, p. 27).

But most of the delays have sprung from other causes, poor coordination and faulty liaison being among the main shortcomings. Slowness of the Budget Bureau in apportioning money has been pretty well scotched as a brake on progress. The services have admitted to Congress that the bureau comes through with the money as soon as the military submit complete plans. What the bureau refuses to do is allot money for ephemeral projects.

• **It's a tough job**—Creedon's tight little directorate wields a lot of authority in the Defense Department. With the backing of the Secretary, the installations director can lay down the construction rules for the military departments.

Doing that job inevitably arouses plenty of opposition and ire—even more among the lower echelons than in the high brass. Creedon has aptly epitomized the task as "no popularity contest." But with the Defense Secretary firmly behind him, the director can make big changes and make them fast.

There is no intention of running roughshod over the heads of the services and their construction agencies. Everybody gets a chance to speak his piece before a decision is made. But once a new rule is issued, it supersedes hoary tradition and past precedent in all branches to which it applies.

Broad duties are assigned to Creedon by his directive from Secretary Robert A. Lovett. Besides maintaining direct surveillance over the planning and construction of all military public works—and incidentally keeping the Secretary fully informed on the status, progress and cost of these projects—the installations director has the even more important job of developing Defense Department policies.

• **Functions outlined**—Fundamental to the department's whole construction program, these policies will establish the principles and pattern for computing military works requirements.

Second, they will map out the system for collecting and recording detailed information on (1) Facilities in existence, under construction and not yet started, (2) Utilization of these facilities—in all three categories, and (3) Condition of existing facilities.

Beyond his policy-forming duties, the director has a number of other basic jobs. For one, he is to develop uniform design criteria and construction standards for use by all three military departments. Already Creedon's staff is far advanced on the first of these standardization projects. It is sure to run into a hot crossfire of objections. What may be satisfactory to one service won't please the others. But, when Creedon and Lovett approve the standards, they will become mandatory for military construction in all branches.

Functions of Creedon's office break down logically into three phases—planning, programming and expediting. On the planning side, he has to set up the guideposts for the military departments in preparing their public works programs and prescribe the review procedures to be used in evaluating those programs. At a later stage, the director is to recommend the final programs to the Secretary of Defense for his approval and presentation to Congress.

But that does not end his responsibility. For approved public works programs, the installations director is to work with the assistant secretaries in charge of legislative and money matters in drafting authorizing legislation and appropriation requests for Congressional action.

Phase 2 of the director's operations becomes fully effective after Congress has acted on authorization and appropriations. Scheduling of construction for each project already will have been worked out as part of the program submitted to Congress. Then it will be up to the military department to do definitive programming of the work, with the director of installations riding herd on the whole operation, from the fixing of dates to final performance.

Programming of funded projects is a big part of the present job in the director's office. Data now being assembled will show what the services plan to do. Their schedules will be approved only in so far as they put first things first. Creedon demands that runways be built ahead of officers' clubs.

MILITARY PUBLIC WORKS

(Millions of dollars)

	Army	Navy	Air Force	Total
Authorized				
Fiscal year 1951.....	584	618	1,331	3,533
Fiscal year 1952.....	1,474	855	3,544	5,873
Fiscal year 1953.....	328	257	1,813	2,398
Totals.....	2,386	1,730	6,688	10,804
Appropriated				
Fiscal year 1951.....	500	470	1,448	2,418
Fiscal year 1952.....	1,048	852	2,259	4,159
Fiscal year 1953.....	586	363	1,200	2,149
Totals.....	2,134	1,685	4,907	8,726
Obligated				
Fiscal year 1951.....	309	361	923	1,593
Fiscal year 1952.....	552	458	1,081	2,091
Fiscal year 1953 July..	20	50	110	180
Aug. *	20	50	110	180
Unobligated as of 31 August	1,300	845	2,750	4,895

(* Estimated)

• **The need for speed**—In the expediting phase of its activities, the director's office functions as a central interchange for top-level liaison to eliminate delays. Staff members give quick go-between service for the military branches inside and outside the Department on matters requiring action by the Secretary of Defense, the Budget Bureau and, if necessary, by the White House and Congressional committees.

The prime objective is to see that construction is not held up because of a slowdown in communications between two military agencies concerned with one project, or between any agency and the Secretary's office or the Budget Bureau.

One of the specific duties assigned to the director's office bears directly on this expediting function. The director is instructed to resolve conflicts between two or more military departments that want to acquire or use a single installation or adjacent installations where operations of one service interfere with operations of another.

Creedon's Office is a continuing unit in the Department of Defense. Congress set up the post of Director of Installations in the Military Public Works Authorization Act signed July 14. The law states that the director shall be appointed by and shall be responsible to Secretary of Defense.

IJC gives approval to St. Lawrence plan

Governments of the United States and Canada have been given the go-ahead on the two-million-kilowatt St. Lawrence hydro-electric development, a vital part of the long-planned seaway.

The International Joint Commission, meeting in Montreal Oct. 29, approved the application of both governments to proceed with the huge power development. No decision has yet been made as to the agency that will construct the U. S. portion of the project. Canada has already named the Hydro Electric Power Commission of Ontario to build and operate the works on the Canadian side of the river.

On this side of the border, the Federal Power Commission, which is reconsidering an application filed by the Power Authority of the State of New York for construction of the U. S. portion, has extended the time in which protests against granting that application may be filed. Original cutoff date for protests was Oct. 30; the time has been extended to Dec. 1 at the request of a number of interested parties.

The Interior Department, which favors federal construction of the project, is understood to be among those which have sought to delay FPC action on the New York application.

MOTORISTS AND TRUCKERS are experiencing plenty of trouble on U. S. Route 23 near the new Portsmouth A-bomb project in Ohio. A new four-lane highway is planned to replace this section south of Chillicothe, where traffic is snarled for miles.

Ohio plans new turnpike

With construction of its 241-mi east-west turnpike just getting started, Ohio is already planning a second superhighway to run north from Cincinnati to Toledo.

At official groundbreaking ceremonies on the $326-million Ohio turnpike last week, Gov. Frank J. Lausche announced he had ordered James W. Shocknessy, chairman of the Ohio Turnpike Commission, to make a study of the new north-south project which would be financed through bond issues.

Simultaneously in Washington, D. C., the U. S. Supreme Court removed the last legal roadblock on construction of the Ohio Turnpike. As predicted (ENR Oct. 18, p. 18), the court refused to review an Ohio Supreme Court ruling denying intervention by disgruntled taxpayers in a "friendly suit" establishing validity of the Ohio Turnpike Commission funds. The effect of the court's action on the Baldruff vs. Ohio Turnpike Commission petition is to give final "go-ahead" authority on construction.

The first section of the Ohio Turnpike will run from Petersburg to the vicinity of Toledo. First project of this section is a double bridge across the Cuyahoga River Valley in Boston Township, near Warren. The groundbreaking took place at the footing for Pier 3 of the 2,650-ft span, which will cross at a height of 175 ft above the river. Contract for the substructure, which is to cost $1.2 million, is held by the Horvitz Co., of Cleveland, Ohio.

The Turnpike Commission said the rest of the major contracts for this section will be awarded within six months. Completion of the section of the turnpike is scheduled for the spring of 1955.

• **Connecticut expressway plans**—The Connecticut Highway Users Conference, meanwhile, submitted to Gov. John Lodge a highway construction plan to finance the state's $310-million "urgent needs program" over a 10-year period without a gas tax increase.

Key to the suggested program is construction of a new dual lane Route 1 from the New York state line to Saybrook, Conn., replacing the present highway. First leg of this route would be the new Fairfield County Thruway now being planned for the 40-mi stretch from the New York line near Greenwich, Conn., to Bridgeport-New Haven.

The group advocated financing of this route by a self-liquidating bond issue of not more than $120 million. Tolls collected would be used to finance continuation of the expressway to Saybrook, along with regular highway revenue. This would free other highway revenue for additional essential projects under the "urgent needs program."

Governor Lodge is expected to refer the proposal to the special highway planning committee he named early this month. This committee is to recommend a highway program for consideration by the 1953 state legislature when it convenes next year in January.

Shakeup readied in Massachusetts to speed public building construction

(Second of two articles)

For the first time the details of a study of public building construction in Massachusetts, prepared by a group of the country's leading engineering experts, can be made known. While the study itself, as well as proposed legislation to put some of the recommendations into effect are still closely guarded confidential documents, what they contain is reported here on authority that cannot be questioned. The proposals are not only of interest to Massachusetts, but in a broad way, they have an important relationship to bid-shopping legislation now pending before Congress.

As indicated in the first article of this series last week (ENR Oct. 30, p. 24), the Massachusetts "anti-bid-shopping" law regulating construction of public buildings, has bred some highly complex problems. Contractors, subcontractors and building tradesmen are hacking away at some of these complexities by proposing changes in legislation, and by court action. The Massachusetts Public Building Commission, which supervises administration of the law on state projects, is solving others.

Still, many big construction firms of national and international reputation will not undertake construction of public buildings in Massachusetts. Those who do undertake it encounter red tape, delays, and the threat of legal action. The situation is not a healthy one—for the construction industry, or for the state.

Last week's article explored the details of contract regulations. But the problems resulting from these regulations have broad implications. Their tentacles reach into the entire administration of public building construction. It was to this second phase of construction—at the state level—that the study group of engineering experts directed its efforts.

• Little Hoover Report

In 1949, the Massachusetts legislature set up a "Little Hoover Commission." Its purpose: To eliminate duplications and overlapping of functions; to improve operational efficiency by cutting out red tape and introducing sound management practices in state business.

Called the Special Commission on the Structure of State Government, it is made up of 14 members—seven from each political party. It has a staff quartered in the State House, headed by Executive Director William A. Waldron.

At the outset, the commission saw the assignment was a broad one. So it set up a series of study groups to tackle various sections of the job. One of the most important of these was the "Study Unit on Construction."

Named to serve on this study were: Walter C. Voss, head, Department of Building, Engineering and Construction, MIT; Albert Haertlein, Gordon McKay professor of civil engineering and chairman of the Department of Engineering, Harvard University; Emil A. Gramstorff, professor and chairman of the Department of Civil Engineering, Northeastern U.; Burnham Kelly, director of the Albert Farwell Bemis Foundation, MIT; and Werner H. Gumpertz, professor in the Department of Building, Engineering and Construction at MIT.

The study group set about its task with energy and thoroughness. It interviewed the heads of 15 state agencies; it studied the organization and activities of the Massachusetts Public Building Commission (MPBC); it sent inquiries to 33 other states that have some unified construction service, and interviewed New York State officials personally; it consulted private architects, engineers, builders, and building tradesmen.

In all, the study took 18 months to complete. Some of the changes it recommends are drastic. Many have a refreshing new approach to the key problem of getting the most value for money spent by the state for construction.

• **What the study found**—To select a course for the study, the group considered three alternatives: (1) State agencies controlling all phases of their own projects. (2) A central agency controlling all phases of projects for state agencies. (3) A compromise between these two courses—with state agencies initiating and providing for the project, but a central agency supervising construction of the projects.

The last of these three was chosen. It somewhat parallels present organization in Massachusetts, but the differences outnumber the similarities.

The Massachusetts Public Building Commission consists of five members appointed by the governor. It now partially supervises state building activities (not including projects under the Public Works Department such as roads, bridges, etc. which were outside the scope of this study). Under it are Executive Director Hall Nichols and a small staff. But it is said to be too weak in some cases. Its regulations are too cumbersome and restrictive to provide effective control, and they cause unwarranted and costly delays.

Every year, state agencies submit preliminary estimates on what projects they will need for the next five years. When all requests are in, MPBC makes up a five-year program for the state and submits it to the legislature for appropriations.

After appropriations are made, the agency and the MPBC pick a designer. Working with the agency, the designer readies preliminary plans and specifications which are given to MPBC for approval. When given a go ahead, the designer makes final plans and specifications for MPBC approval. Here, the study reports, there is delay because of restrictive decisions and lack of coordination.

The job is then bid on standard contracts prepared by MPBC and the low responsible bidder is named by the agency, with approval of MPBC and the attorney general. The agency then has the duty of inspecting the job as construction progresses.

Any proposed changes, once the job gets under way, must go through labyrinthine channels of red tape. Few agencies have adequate engineering personnel to supervise the job thoroughly. Others are overstaffed.

To correct these shortcomings, the study group recommended that MPBC should be abolished. In its place a Public Construction Commission should set set up, with a director under it, assisted by an adequate professionally trained staff.

• **How it would work**—One of the interesting features of the proposed setup is the elaborate precautions taken to remove the Public Construction Commission from political pressures. This feature is doubly interesting, because it is being omitted from legislation now being drafted.

The study group recommended that the governor should appoint the commissioners from candidates submitted by: The Engineering Societies of New England, Inc., The Massachusetts State Association of Architects, the Associated General Contractors of Massachusetts, the AFL Building Trades Council, and the Massachusetts Bar Association. One member would be selected from each group to serve for 5-year terms which could be staggered—without compensation except for per diem and expenses.

The commission would supervise the activities of the director whom it would appoint; it would also serve as a board of appeal from his decisions.

The director would be thoroughly qualified in actual construction work as well as technical training, and would be well paid. He would set up the state construction program in the same way it is done now. In cooperation with each state agency, he would appoint the designer for each project. Then he would insure that the plans meet necessary standards, but the designer would be permitted more freedom for creative effort. In cases of disagreement, the commission would serve as an appeal board.

The director would also conduct the bidding procedure and award the contract with approval of the commission. Again, in the event of disagreement, the agency can appeal to the commission. After construction starts, the agency has nothing more to do with it until it is completed.

During construction, the designer would have the responsibility of supervision. He would have a "clerk-of-works" who would keep his fingers on all detail phases of a project, expediting requests for change orders, keeping continuous cost records, and serving as a center for information.

Changes approved by the designer would be cleared for the contractor promptly with approval from the director. On completion of the job, the designer and the director would accept or reject it, and final payment would be approved by the commission. The agency then would take over responsibility for operation and maintenance.

The director would set up with the agencies' maintenance engineers a system for accumulating records on the performance of materials and equipment. These records would provide a storehouse of experience, not only on the materials and equipment, but on the work of contractors. These records would help shape future projects.

• **Changes recommended**—This thus streamlined procedure would necessitate important changes in current state building practice. The group recommended that the MPBC be abolished in its entirety, and the new Public Construction Commission set up. Proposed legislation does not include this change.

The new director would have more authority to take prompt action, but his authority would be restricted as to details of design methods and specifications. He would have a stronger inspection system.

Here is how the various state agencies would be affected: The Port of Boston Authority would have its engineering staff trimmed. The construction division of the Metropolitan District Commission would be abolished and its engineering functions taken over by the commission's water or sewer divisions. The construction activities of the Metropolitan District Commission would be transferred to the supervision of the Public Construction Commission.

The engineering staff of the Department of Mental Health would be cut back to a maintenance force. The State Airport Management Board would lose most of its engineering staff. The Department of Public Works would have its building construction supervised by the Public Construction Commission.

Other agencies would not employ engineers or architects except for maintenance and operation. These include the Department of Public Health, the Military Department, the State Superintendent of Buildings, the Department of Conservation, the Department of Correction, the Department of Public Safety, the Department of Public Welware, and the Department of Education.

The State Housing Board would be abolished and its functions transferred to other agencies. The state law regulating bidding procedures would be redrafted to fit in with the proposed plan. Procedures for paying contractors would be revised so that they can be paid more promptly after completing a project.

• **Here are the savings**—Under this simplified system, the study group listed seven improvements which would result:

1—State agencies would drop a number of engineering employees. The new commission would employ only a few more than it has now, but they would be better paid.

2—The architect or engineer would have more freedom to design and change a building for lower cost or better construction.

3—Less red tape would mean fewer clerks.

4—Less delay would let the contractor operate more economically.

5—Better inspection would result in better buildings.

6—A more uniform approach by all agencies would reduce guesswork and make for lower bids.

7—Continuous performance records would provide a reliable guide for materials and equipment selection, and would aid in the selection of contractors.

In short, the recommendations would make the construction of public buildings conform more closely with good commercial practice, the agency corresponding to the owner and the Public Construction Commission to a consultant.

• Legislation planned

This study went into the hopper of the Special Commission on the Structure of State Government, and the legislative proposals about to emerge show the study carried influence.

The changes to be recommended by the commission in some ways fall short of the study group's objectives, but they will represent a move in the right direction. Whether they will move far enough in that direction to satisfy the study group is a question as yet unanswered. The study group has reserved the right to publish its complete report if it is not satisfied.

The "Little Hoover Commission" is up against a deadline in the preparation of its legislation. It will go out of existence April 1, 1953. It has another study on the construction of public works other than buildings under way, but not yet completed. It has studies under way on the Port of Boston Authority, the Metropolitan District Commission, the Department of Public Works and others. These reports must be completed, findings consolidated, and final recommendations drawn up for legislative action at the next session.

The commission is aware of the inordinate delays in getting contracts signed, plans approved, construction started, and change orders processed on the construction of state buildings. It is aware that the present system does not provide strong enough inspection, and realizes that this is costing the state money.

In its confidential report, drawn up after consideration of the study unit's findings, it points out that the processing of a project now requires 38 mandatory and distinct steps under the law from the time it is started until it is completed. Change orders—even for trivial amounts—must go through nine or ten stages of administrative handling before final approval.

The commission points out that the MPBC is inadequately staffed. While MPBC is responsible for supervision of 240 different projects representing more than $80 million, it has only nine persons on its staff.

The various state agencies are contributing to delays by failing to act promptly. It shows how almost always more than two months elapse between the time an appropriation is made for a project and when the agency recommends a designer. Then there are delays because of disagreements between agencies and MPBC.

The commission finds the MPBC coverage is inadequate. A number of agencies and projects have been exempted from its supervision. As an example, it cites the Port of Boston Authority, and says the public build-

ing activities of the authority should be returned to supervision by the central public building agency. It refers to the duplication and overlapping of engineering work in other state agencies, and says they could be transferred to a central agency at great saving.

The commission report hits the lack of adequate supervision, and points out that a contractor has a temptation to submit a low lump sum bid with the idea of recovering on later changes. High maintenance costs after the project is completed are the result.

Reviewing these shortcomings, the "Little Hoover Commission" comes up with its recommendations.

• **What it recommends**—The "Little Hoover Commission" has discarded the recommendation by the study unit for a Public Construction Commission. Instead it recommends that an Office of Public Construction be set up under the Governor's Commission on Administration and Finance.

The Massachusetts Public Building Commission would be abolished, and the director of the new Office of Public Construction would take over almost all of MPBC's authority. The Commission on Administration and Finance would then serve as an appeal board.

The director of the new Office of Public Construction would have these duties:

1—Schedule projects for the various agencies as it is done now.

2—Approve the designer recommended by an agency, or if no recommendation is made, appoint one.

3—Provide standard contract documents and standard specifications, but the designer is not required to follow them so long as his plans meet the minimum standards.

4—Cooperate with the agency on the working out of the plans and specifications before finally approving them, appointing an examiner to expedite preparation.

5—Put the job out for bids in accordance with the present law, and select the lowest responsible bidder with the approval of the commission—broadly, act as the contracting authority instead of the agency.

6—Spur progress on the job, cooperating with the state agency on change orders, but retaining authority to approve or disapprove them within the limits of the funds available for the project.

7—See that the designer provides a competent "clerk-of-works" to perform the functions outlined by the study unit.

8—Accept or reject the completed work and authorize final payment, on approval from the commission.

ROBERT LA CENTRA, JR., plumbing contractor, leads the Associated Independent Subcontractors of Massachusetts.

9—Set up, with the agency, adequate maintenance and equipment records.

To accomplish this simplified procedure, the "Little Hoover Commission" adopted the changes recommended by its study unit for reorganization of engineering functions of other state agencies. It calls for the authority and duties of the Office of Public Construction to embrace all building construction performed by any state agency, except highways, bridges, shore protection work, and minor buildings related to these jobs.

At present its plans specifically include the study unit's recommendations on the Port of Boston Authority, the Department of Mental Health, and the State Airport Management Board. Its report does not mention the Metropolitan District Commission; but that agency and all other state agencies are covered in the report's definition of the authority of the Office of Public Construction.

With this plan the "Little Hoover Commission" hopes to accomplish the same benefits listed by the study unit. It is this plan that is now being worked into recommended legislation. Whether the plan is ever put into effect will depend upon the state administration, the state legislature, and public pressure.

• The outlook

The "Little Hoover Commission" report is a wholly constructive effort, state officials agree. The reorganization it proposes should benefit the state, the general contractors, subcontractors and building trades. If the reorganization is to be put into effect, they will have to mobilize their efforts behind it.

Whether they will supply the necessary pressure is still an open question, because this is the first time the "Little Hoover Commission" proposals have been reported. Also, they provide only a partial solution of their problems, because the commission did not come to grips with the problems of bidding procedure.

Construction men say the system for public building construction in Massachusetts in operation today leaves much to be desired.

There are many ideas on how to improve the system. Almost everyone agrees that legal action is the worst way. New legislation offers the most satisfactory answer, but there is little agreement now on what the new legislation should contain.

Allan E. Gifford, former president of the AGC Managers and Secretaries Council and now manager and assistant treasurer of the Master Builders Association in Boston, thinks new efforts at cooperation among the general contractors, and between them and the subs, hold great promise.

Many of the problems can be straightened out within the industry. Any new legislation proposed by general contractors groups will be more thoroughly worked out and coordinated than it was last year when two groups sponsored bills independently.

Robert La Centra, Jr., a leader of the Associated Independent Subcontractors of Massachusetts, says progress already has been made to protect the subcontractors, and declares his organization is not fighting the responsible general contractors, but the irresponsible ones.

Ernie Johnson, secretary-treasurer of the AFL Building and Construction Trades Council in Boston, has indicated his organization will steer clear of differences between the generals and the subs. It will concentrate on efforts to prevent jurisdictional disputes that result from employment of both union and non-union generals and subs on the same project.

The entire situation in Massachusettts should serve fair warning that proposed bid-shopping legislation now pending before Congress must be considered carefully.

It is obvious that the difficulties encountered in administration of the law in Massachusetts, could be increased a thousand-fold by hasty congressional action which would not provide adequate machinery for making application of a federal "anti-bid-shopping" law practicable. A poorly planned federal law could plunge the whole federal public works program into a morass of red tape and a turmoil of legal actions.

UNSEASONABLY DRY and warm weather has permitted work to go on at Fort Randall Dam beyond the normal time for closing down. Workers hurry to place concrete before cold weather arrives. (Photo by Earle Bunker)

Dam construction races to reduce future Missouri River flood threats

In the event of a flood on the Missouri River next spring, the Corps of Engineers will have an ace-in-the-hole, in the form of Fort Randall Dam—just north of the Nebraska-South Dakota state line.

The closure of Fort Randall Dam last summer affords a new measure of flood protection on the Missouri from any future flood originating on the upper river in the Dakotas and Montana. This difficult but successful engineering and construction feat makes Fort Randall Dam a flood-control barrier on the Missouri.

Brig. Gen. W. E. Potter, Missouri River Division Engineer, told ENR last week that the 85-ft high barrier now in place in the 1,000-ft long river section of Fort Randall Dam is sufficient to reduce by 4-to-5 ft the crest of a flood similar to the one last spring (ENR April 17, p. 21 and April 24, p. 21). That flood caused $179 million of tangible damages, although Army Engineer protective works saved an estimated figure of $238.6 million in damages.

"Our most significant accomplishment for major flood-control during the 1952 construction season," said General Potter, "was the successful completion of the Fort Randall closure on July 20. To date we have succeeded in building up the closure section of the embankment to a height of 85 ft above the streambed.

"This gives the people living along the river below Fort Randall assurance that in the event of a major flood generated in the upper river next spring its crest would be reduced by 4-to-5 ft at Omaha through the operation of the project even though the dam is not up to its full height."

• **Emergency plans**—General Potter said that the Omaha District Engineer Office—which has direct charge of building Fort Randall Dam—also has plans prepared and procedures ready for raising the closure section under an emergency program in the event of a flood next spring.

This will be made possible because a contract for Stage IV embankment is expected to be awarded this fall, resulting in the contractor having sufficient heavy equipment on the project to meet such an emergency by building a dike 10-to-12 ft high on top of the present closure section.

An exceptionally good working season, weatherwise, has enabled the Corps of Engineers to make better progress than expected on its Missouri River main stem dams—Garrison, Fort Randall, Oahe and Gavins Point.

All four projects have had high working-day percentages and, to date, there has been no freezing rain which is unusual for this time of the year in that latitude. Most major construction operations have been hammering away on two 10-hr shifts per day to do as much as possible before cold weather.

At Garrison Dam, 85 miles north of Bismarck, N. D., the west abutment has been completed to crest elevation and faced with rock. Good progress is reported on the east abutment which has been built up to a height of 85 ft. The contractors are excavating the spillway channel, and two weeks ago started placing concrete in the downstream spillway slab.

Definite plans have been made to make the closure of Garrison Dam next May or June. Fort Peck Reservoir, in Montana, will be operated throughout this winter at a lower level than normal. This will produce additional storage next summer to reduce the level at Garrison during closure.

Construction at Oahe Dam, near Pierre, S. D., was concentrated this season on placing rolled-fill embankment to form the west abutment. At Gavins Point Dam, near Yankton, S. D., the Army Engineers blocked off one or two river channels with a long dike to expedite the placement of Stage I embankment (ENR Sept. 25, p. 27).

• **The role of Fort Peck**—Fort Peck Dam, in Montana, is the workhorse on the Missouri. By impounding the maximum amount of water possible, it knocked 1.5 ft to 2 ft off the flood crest last April. With the aid of Heart Butte and Shadehill Dams it prevented an estimated $35.9 million damages during that flood.

Currently, Fort Peck is releasing water for navigation on the Missouri and Mississippi Rivers and to augment low flows in the river downstream, to provide additional water for domestic and industrial use. Over 1,000 miles of Missouri River Valley is suffering from various degrees of drought.

At Omaha—where there has been no measurable rainfall for the last 35 days—the river crest was 4.5 ft on Oct. 25. This represents a discharge of 30,000 cfs, compared with more than 400,000 cfs during the flood last April. One-half of this present flow comes from Fort Peck Reservoir, and is released three weeks before reaching Omaha.

Here's the picture of Fort Peck's role in next spring's flood, if it comes. All during this fall, water is being released from it to insure an empty flood pool next spring.

Two other dams completed this year will also give flood protection in the Missouri River Valley. The Corps of Engineers' Harlan Country Dam on the Republican River in Southern Nebraska has a flood storage capacity of 500,000 acre-ft (ENR June 12, p. 28). The Bureau of Reclamation's Boysen Dam on the Big Horn River in Wyoming has a flood storage capacity of 150,000 acre-ft in addition to 410,000 acre-ft for irrigation and hydro power (ENR Sept. 18, p. 32).

By March 1, the Army Engineers expect to have the reservoir drawn down to pool elevation 2,222 ft. At that level there will be 13,300,000 acre-ft of water impounded as compared with 19,400,000 acre-ft at full pool level.

This means that Fort Peck will be

able to impound 6,100,000 acre-ft of flood water next spring if necessary, or it can retain up to that amount to keep the river as low as possible while making the closure of Garrison Dam.

• **Issues warning**—Although General Potter expressed satisfaction with this season's construction progress on the four main-stem dams—and the extent to which Fort Randall and Fort Peck will aid in flood control next spring—he warned that satisfactory and dependable flood control on the Missouri River is several years away.

These are only two initial projects in the Pick-Sloan program of flood control and other benefits for the Missouri River Valley.

Under its emergency repair program the Corps of Engineers has rebuilt and repaired all privately owned farm levees and federally owned agricultural levees that were damaged by the flood last spring, but the reconstruction of this levee system, together with what flood control is available from Fort Peck and Fort Randall, doesn't mean that such towns as Bismarck, Pierre, Sioux City, Omaha, Council Bluffs, St. Joseph and the Kansas Citys are out of danger from high waters of the Big Muddy.

Even with these and other existing protective works, warned General Potter, melting snows and unpredictable fast runoffs next spring can again wreak havoc along the Missouri.

Reclamation water plan dropped because of cost

The Shafter-Wasco Irrigation District, in California's San Joaquin Valley, has adopted plans to build its own water distribution system, thus in effect rejecting a Bureau of Reclamation proposal to build the system.

The main reason for the district's decision was cost. The bureau's proposal would take an estimated $10,968,000, whereas the district estimates its own plan at $6,362,000. Both plans would combine concrete-lined canals with underground concrete pipelines. Principal differences are that the district's plan would use less expensive measuring devices and a lower pressure system requiring less reinforced pipe.

Also at issue is ultimate ownership of the system. Some bureau-irrigation district contracts leave in doubt whether the distribution works will revert to the district after repayment or remain the property of the U. S.

Shafter-Wasco is one of 18 irrigation districts that will tie into the Friant-Kern Canal, part of the bureau's Central Valley project. It is the first to decide to build its own distribution system.

Court ponders power feud

Will the Virginia Electric Power Co. begin immediate construction of a $27-million hydroelectric project now on Roanoke Rapids, Va., or will the federal government hold onto the site and build at some unspecified future date?

That is the main issue in the controversial Roanoke Rapids case which the U. S. Supreme Court is pondering. A decision is expected by mid-December. Outcome of this case could determine partially the future role the government will play in hydroelectric development.

In dispute is who shall build the 91,000-kw Roanoke Rapids project on the Roanoke River in Virginia and North Carolina. The Federal Power Commission has granted a license to Virginia Electric Light and Power Co., but Interior Department contends that Congress has already reserved the site for federal use. Interior asked the Supreme Court to invalidate the FPC license.

Presentation of the case by both Interior and FPC lawyers was interrupted time and again by the Supreme Court justices who shot pointed questions at attorneys for both sides.

Chief Justice Fred M. Vinson, a former congressman, said at one point, "I should be very much surprised if many projects approved (by Congress) were never undertaken."

This remark appeared to favor the FPC contention that Congress had approved the basin-wide plan of 11 projects for the Roanoke River Basin, but had authorized only the John H. Kerr and Philpott projects.

Justice Felix Frankfurter asked the FPC attorney to furnish a list of projects that had been approved but never undertaken by the federal government.

• **Interior's case**—Addressing himself to the three questions before the court, Interior attorney Gregory Hankin contended:

1) The Interior Department, as a power-marketing agent for the government, has a large stake in government construction of the Roanoke project. Because of this, the department has a right to challenge the FPC license.

2) In the Flood Control Act of 1944, Congress expressly reserved the Roanoke Rapids site for federal development.

3) FPC had once approved the basin-wide plan later approved by Congress and is therefore prohibited from licensing an electric company to construct and operate one of the projects proposed in the plan.

• **The other side**—In reply, FPC general Counsel Bradford Ross argued:

1) Interior can have no valid interest in the project until power becomes available from it.

2) Congress never meant to reserve the site for federal development and language of the 1944 act makes this clear.

3) In giving general approval to the basin-wide plan, FPC never gave approval to exclusive development by the federal government.

VEPCO Attorney Justin Moore joined with FPC in answering the Interior charges. Virginia REA Association, a potential customer of power from the disputed project, argued in favor of Interior.

• **More work involved**—If decided on the main issue, the outcome of the case could determine whether private electric companies will have a chance to build at least 18 other hydroelectric projects in the Roanoke River Basin and the Savannah River Basin of South Carolina and Georgia.

Identical language in the 1944 Flood Control Act applies to projects in both basins. It is possible that a large number of hydroelectric sites in other basins may fall in a similar category under public works laws.

$40-million project planned near Philadelphia

A one-stop shopping and commercial center, costing an estimated $40 million, will be built on one of the extreme fringes of Philadelphia. The site will be part of what was formerly the Bala Golf Course of the Philadelphia Country Club.

Plans include a department store, about 100 shops and stores, a 12-story office building and a 12-story hotel. There will be parking facilities for approximately 6,000 automobiles. Construction will start in the spring of 1953, according to John McShain, president of John McShain, Inc., Philadelphia construction firm, developers of the project.

Buildings will be of concrete and glass, faced in part with Pennsylvania fieldstone, and will be designed by Welton Becket Associates, of Los Angeles. There will be numerous road entrances to the center, which will be built on a 72-acre tract. Trucks making deliveries to stores in the project will move through tunnels.

The office building will have about 200,000 sq ft, about one third of which will be devoted to medical offices. Altogether, there will be about 1,000,000 sq ft of space for commercial and professional occupancy.

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HARRY BATES once more held the leadership reins of the bricklayers union when he was re-elected president despite a rumored desire to resign.

Bates re-elected head of bricklayers

Re-election of Harry C. Bates for another four-year term as president highlighted the convention of Bricklayers, Masons and Plasterers International Union of America, in Minneapolis, Minn., last week.

Bates, who has headed the union since 1935, was rumored to be ready to retire and hand over the presidency to John J. Murphy, now union secretary. However, action of 475 delegates representing 292 locals present at the convention nullified that rumor.

Murphy was renamed secretary and Thomas F. Murphy was re-elected treasurer.

While the international union normally takes two weeks to hold its biennial convention, this year's meeting wound up in five days to permit delegates to return to their homes in time to vote in Nov. 4 Presidential election.

• **Politics**—President Bates, in his report to the convention, declared that labor must push for national measures to be enacted by Congress in order to "avoid the far-reaching economic dislocation which Soviet Russia wants to see here." He urged repeal of the Taft-Hartley Law which he declared "puts into the employers' hands enough ammunition to deal a crippling blow to labor once jobs become scarce."

Bates recommended provisions in union contracts which would permit workers to remain on jobs if they wished. Declaring that it seems "reasonable and desirable" that for every five members of a trade on a job at least one should be a senior worker.

He declared everything possible must be done to avoid recession or depression and pledged his union "will support every sound policy" designed to assure continuing economic stability and to avert mass unemployment. However, he warned, the union must also be prepared "for a day when a growing number of men in our trade will find themselves out of work."

• **Speeches and speakers**—Richard Gray, president of the AFL Building Trades Department, told delegates that labor may have been "lulled into a false security" during the present prosperity and declared that some members of both the Democratic and the Republican parties have not permitted labor to play the role it should.

Archibald Cox, chairman of the Wage Stabilization Board, addressed the first afternoon session, outlining the work of that board and recommending to various locals ways of speeding up wage adjustments which they may seek. He declared that the present controls law has some serious inadequacies.

Cox said that new plant construction is at a very high rate, which will continue for a least another half year.

Acknowledging that the bargaining power of the bricklayers is high and that the union is not in a position to command large wage increases, Cox said delegates will have to decide for themselves whether it is wise to use all their bargaining power.

"If wage rates in any field of construction become too high," he warned, "there is bound to be the development of substitutes. People will use what substitutes now exist. They will spend time and money looking for others. And so the final question which I would leave with you is whether you should look to the short-run and get all you can at once, leaving the future to worry about itself, or whether some measure of self-restraint is not the wiser policy."

Other convention speakers were: James Marshall of Washington, D. C., secretary of the Associated General Contractors, who thanked the union for the cooperation it has extended the AGC and Robert Hendershott, secretary-manager of the AGC of Minnesota.

Defiant union head fined and ousted

Roy J. Underwood, president of Local 542, International Union of Operating Engineers, AFL, was removed from office and fined $3,500 by the international union, in an action arising out of the 110-day strike that tied up more than $100 million in heavy construction in the Philadelphia metropolitan area this spring and summer (ENR Aug. 28, p. 29).

He also was suspended from membership in all branches of the union for six years.

The ouster was brought on by Underwood's defiance of orders from William E. Maloney, IUOE president, to end the local's long strike and Underwood's subsequent lawsuit against Maloney and the IUOE.

Charles S. Denoncour, former vice president of the local, was named to replace Underwood.

Underwood said, through a spokesman, that the action of the international will be appealed through the courts in an effort to regain his former position.

The long strike that came during peak construction months had disastrous effects on some contractors and also cost union members heavily in lost wages. Some 100 contractors employing about 350 union members had all their projects halted by the dispute.

• **Defiance**—Eight days before the end of the strike, Maloney sent a telegram to Underwood ordering the end of the strike and virtual acceptance of the employers' offer. The following day the local filed a suit in U.S. District Court against Maloney, the IUOE and others, charging conspiracy to defraud the members.

The suit was dropped after all parties agreed to a proposal of Federal Judge Alan K. Grim to submit all issues to arbitration.

• **Union trial**—The union's charges against Underwood were brought by William E. Carter, business agent of a New Jersey local, who sat in on negotiations as international union observer late in the strike. He charged that Underwood:

• Defied the constitutional authority of Maloney as president.

• Filed the suit against Maloney and IUOE in violation of the constitution.

• Published literature of a defamatory nature against Maloney.

A half-day hearing before the international's executive board was held in New York in September. Joseph H. Delaney, an international vice-president, was in charge.

Underwood's friends charge that it was a "kangaroo court." Underwood was not allowed representation by an attorney, no evidence was taken and no court reporter recorded the proceedings, they say.

Underwood categorically denied all the charges. He said that in defying Maloney's orders the local actually was carrying out earlier recommendations of Maloney in holding firm to certain bargaining points. He also contended that Maloney's order to end the strike was illegal and exceeded his authority. The local had no time to do anything but go to court to prevent a "complete breakdown" of its position in the strike, he said.

In his defense, Underwood also produced a letter from John J. McDonald, third vice president of the international, to a number of contractors, praising Underwood.

A spokesman for Underwood asserted, "Underwood has exerted every effort to settle this dispute in the utmost good faith."

• **Verdict**—The executive board, in its decision, said Underwood's "resentment" over an earlier court victory by the employers "apparently affected negotiations."

Meanwhile, the arbitration that was agreed upon when the strike was ended, is continuing. A 25-cent-an-hour wage increase retroactive to last May has been agreed upon. Other points are being discussed.

Kiewit and unions agree, ban jurisdictional fights

A contract calling for peaceful settlement of jurisdictional and grievance disputes in the construction of the $1.2-billion atomic energy installation near Portsmouth, Ohio, has been signed by Peter Kiewit Sons Co. and unions affiliated with the Portsmouth Building and Construction Trades Council, AFL.

Jurisdictional questions will be settled in accordince with the procedures of the National Joint Board for Settlement of Jurisdictional Disputes, run by contractors and the AFL building trades. Work will not be stopped while a dispute is being decided.

Grievances will be heard first by the union's international representative and the contractor employing the worker, then by the president or secretary of the AFL building trades and the project manager, then by an arbitrator.

There will be no strikes while waiting for a decision.

WSB dismisses charges of wage overpayments

"Entertainment" and "expenses" incurred by foremen on a construction job were condoned by the Wage Stabilization Board in reversing an earlier finding that Rubin Brothers Plastering Co., Miami, Fla., had violated wage controls.

Last June WSB's Enforcement Commission at Atlanta found Rubin Brothers guilty of paying $3 an hour, 25 cents above the legal rate of $2.75, to the 15 to 50 plasterers employed over a two-month period. A tax disallowance penalty of $19,500—half the total payroll—was assessed, although the excess wage payments amounted to only $1,530. Rubin Brothers ignored the WSB hearing and was convicted on the written statement of a former office employee who handled the payroll.

Jolted by the decision, Irving Rubin, general manager of the company, asked for a rehearing, which was granted. The plasterers testified, denying they were paid more than the $2.75 legal wage. The former payroll employee testified that extra money was charged to the payroll account and entered as "expense" and "entertainment."

Rubin himself told the commission that this money, varying from $52 to $264 a week, covered miscellaneous expenses incurred by foremen on the job. Sometimes a foreman had to hire a casual laborer and would pay him out of this fund, Rubin said, adding that there also were bona fide entertainment costs.

The commission said it could not find any line between these expenditures and the allegations of overpayments of 25 cents an hour and dismissed the charges.

Union welfare fund

Six AFL construction trades unions are demanding that Pittsburgh, Pa., city officials participate in a welfare fund which already has been established under contracts with major construction firms in the area.

Contributions of 7½ cents per hour are being made by construction firms to the Construction Industry Insurance Fund of Western Pennsylvania, which is jointly administered by unions and industry.

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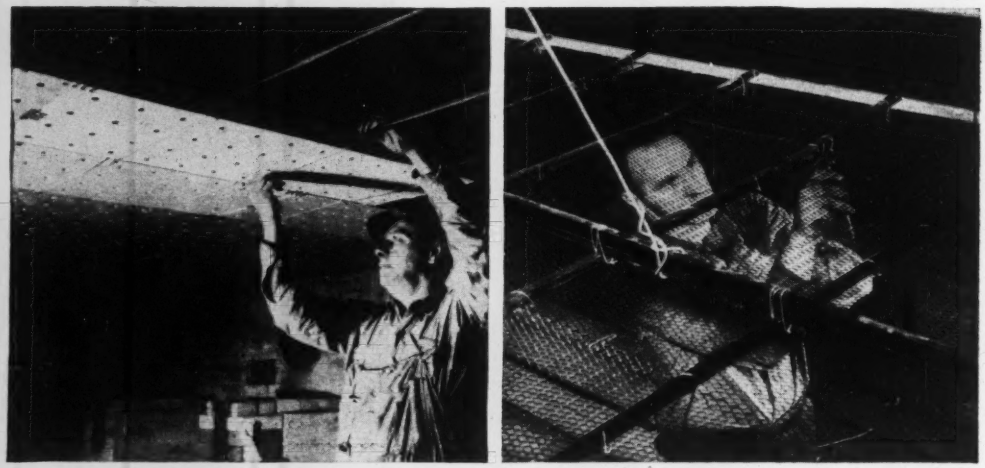


MEMBRANE CEILING for fireproofing light steel members may be constructed on gypsum lath (left) or metal lath (right).

Lightweight fireproofing for steel framing

THOUGH APPLIED AS A THIN COATING, lightweight plasters now available are capable of obtaining the highest ratings needed to meet building code requirements for fire protection of structural steel. This has been proved by a series of fire tests that are still continuing.

In addition, lightweight membrane fireproofing made of noncombustible materials like gypsum plaster with lightweight aggregates, or asbestos or mineral wool fibers, is easier and less expensive to apply than concrete encasement. Furthermore, by reducing the dead load on the framing (see Tables I and II), it enables a considerable reduction to be made in structural steel and foundations.

Consider, for example, a lightweight plaster fireproofing for columns tested last spring. Less than 2 in. thick, it withstood the standard American Society for Testing Materials fire test for more than four hours. Deadweight savings for this fireproofing alone when substituted for heavy-aggregate concrete will exceed 260 tons for a typical 12-story building supported by 20 columns.

Data on the properties of such column fireproofing, as well as on equally effective membrane protection for floor systems presented in this article, were furnished by The Gypsum Association, the Metal Lath Manufacturers Association and The Perlite Association. The last two organizations are sponsors of a test program conducted by the Underwriters' Laboratories in Chicago. Results to date of this series of tests, plus those obtained by the National Bureau of Standards, for commonly used framing are given in Tables III and IV. These tables are far from complete; they are presented merely to demonstrate that three and four-hour fire ratings, the highest required by building codes, can be obtained with thin protective coatings.

TABLE I

Weights of 4-Hour Fire Protection of Steel Columns (10 in. WF 49)

Construction	Wt per Lin Ft of Column —Lb	Comparative Weights —Percent
1 ¾-in. gypsum-perlite plaster on self-furring diamond-mesh lath; no fill	33	100
3-in. thickness of concrete; coarse aggregate granite, sandstone or cinders; fill of same material; steel wire ties	249	755
3 ¾-in. thickness of clay brick with brick fill	244	739
3-in. hollow gypsum tile; covered with ½-in. gypsum and plaster; ¼-in. motar between column flange and block; no fill	73	218

• **Lightweight aggregates**—Perlite and vermiculite, two of the lightweight aggregates tested, weigh about one-tenth as much as sand. Perlite is a siliceous volcanic rock that is "popped" like popcorn to many times its original size by quick heating to 1,800 F. The resulting product resembles small glass-like bubbles. Vermiculite is a laminated mica-mineral, which when heated to about 2,000 F expands much like an accordion.

These products in gypsum plaster provide much greater fire protection than sanded plaster for two reasons: (1) Lightweight aggregates are excellent insulators, and (2) gypsum plasters made with them release their chemically combined water more slowly when exposed to flames.

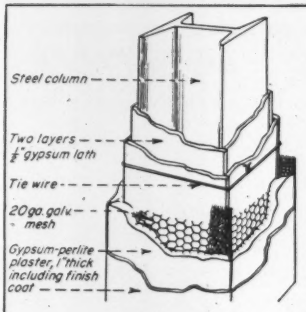
Asbestos and mineral-wool fibers sprayed on metal lath have also been tested. Not only are these good accoustical and thermal insulators, but they have proved to be efficient fire-protective coatings.

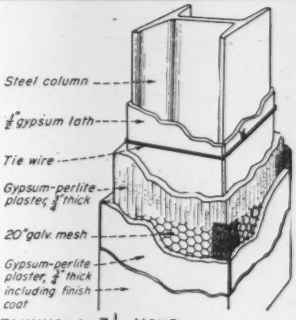
The fibers are factory-mixed with a dry binder, and the material comes to the job ready to apply. It is blown from a special "gun," which mixes the dry fibers in mid-air with a thin spray of water to dampen the binder and produce a light, fluffy blanket on the lath. Tamping with a cork float gives an even finish, which may be

TABLE II

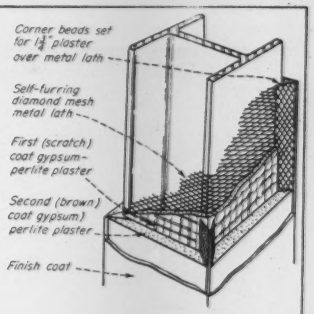
Weights of Metal Lath and Plaster Fireproofing

	Wt—psf
Contact Ceilings	
¾-in. gypsum-sanded plaster	9.5
¾-in. gypsum lightweight-aggregate plaster	4.5
1-in. gypsum-sanded plaster	11.5
1-in. gypsum, lightweight-aggregate plaster	5.5
Furred or Suspended Ceilings	
¾-in. gypsum-sanded plaster	10
¾-in. gypsum lightweight-aggregate plaster	5
1-in. gypsum-sanded plaster	12
1-in. gypsum, lightweight-aggregate plaster	6
Columns	
1¾-in. gypsum, lightweight-aggregate plaster, self-furring lath	9
1⅜-in. thickness of above	7.5
1-in. thickness of above	5.5

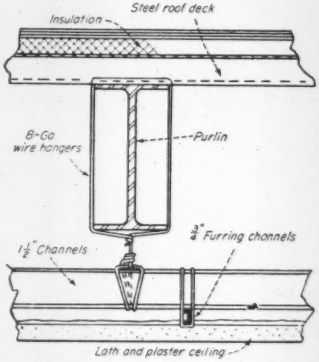




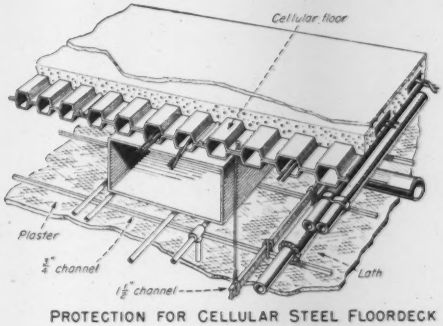
TWO WAYS OF OBTAINING A 3½-HOUR RATING FOR COLUMNS WITH GYPSUM LATH AND PLASTER


Corner beads set for ½" plaster over metal lath
Self-furring diamond mesh metal lath
First (scratch) coat gypsum-perlite plaster
Second (brown) coat gypsum) perlite plaster
Finish coat

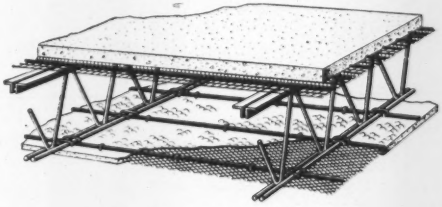
COLUMN FIREPROOFING FOR 4-HOUR RATING



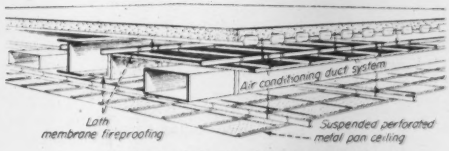
PROTECTION FOR STEEL ROOF DECK



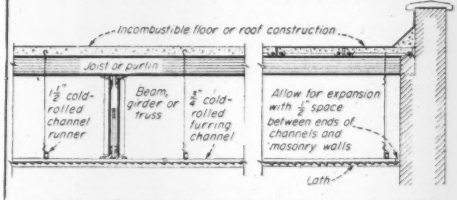
PROTECTION FOR CELLULAR STEEL FLOORDECK



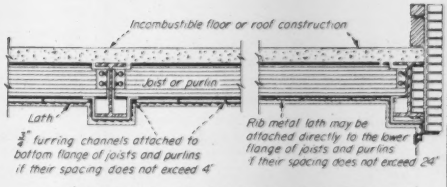
PROTECTION FOR OPEN-WEB JOISTS



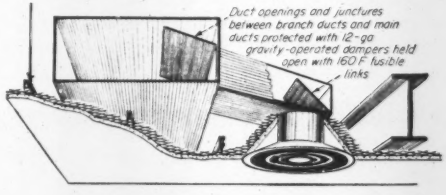
DOUBLE CEILING FOR DUCTWORK


Incombustible floor or roof construction
Joist or purlin
1½" cold-rolled channel runner
Beam, girder or truss
¾" cold-rolled furring channel
Allow for expansion with ½" space between ends of channels and masonry walls
Lath

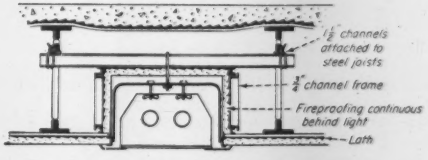
SUSPENDED CEILING FOR BEAMS, GIRDERS, TRUSSES


Incombustible floor or roof construction
Joist or purlin
Lath
¾" furring channels attached to bottom flange of joists and purlins if their spacing does not exceed 4'
Rib metal lath may be attached directly to the lower flange of joists and purlins if their spacing does not exceed 24"

FURRED CEILING FOR BEAMS, GIRDERS, TRUSSES

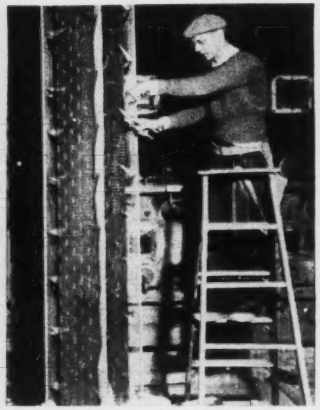

Duct openings and junctures between branch ducts and main ducts protected with 12-ga gravity-operated dampers held open with 160 F fusible links

DAMPER PROTECTION IN DUCTS



LIGHTING FIXTURES IN CEILING

SIMPLIFIED FIREPROOFING for columns begins with self-furring lath . . .



CORNER BEADS are tied on to allow for the necessary plaster thickness . . .

PLASTER is applied in three coats, 1¾-in. thick for a 4-hr rating.

spray painted repeatedly without destroying acoustical properties. Because sprayed fiber mixtures from different manufacturers may vary, the metal lath groups recommend that a brand be specified that is under the Re-examination Service of the Underwriters' Laboratories.

• **Thin column protection**—In recent tests, the lightweight plasters were applied on either gypsum lath or metal lath. Steel columns tested with gypsum lath were wrapped with one or two layers of the lath, which were held in place with tie wires, and plastered to the thickness necessary to achieve the desired rating. Such fireproofing only 2¼ in. thick withstood the standard fire test for more than 4½ hr.

Similar high ratings were obtained with thin coats of plaster on metal lath (Table III). Of special interest is one column fireproofing tested that was applied by a simplified technique; it requires no channel studs, no backfill and no furring gadgets. Furthermore, plaster thicknesses are reduced. In this method, self-furring metal lath is wrapped around the column, corner beads are attached, and plaster is applied to the required thickness for the desired rating.

The lath is a standard product made by running diamond mesh lath through a "dimpling" machine to form evenly spaced indentations. These dimples hold the metal lath away from smooth surfaces a distance of ¼ in. so that the plaster can flow around the lath and form lasting keys.

Although recent fire tests indicate that ¼ in. is the minimum distance that lath must be furred from a column, architectural considerations sometimes require greater furred distances. Tests show that lightweight channel furring is equivalent to self-furring lath in providing efficient fire protection, although construction costs are higher.

• **Membrane ceilings**—Fire tests also prove that, with the lightweight plasters, high fire ratings may be obtained for floor systems, with a considerable reduction in structural steel when used instead of conventional fireproofing. Heretofore, it was impractical to use lightweight floors, such as thin concrete decks over cellular steel panels, junior beams and open-web steel joists, in fireproof construction, where it was necessary to encase each element in concrete. Now, three and four-hour ratings may be had (Table IV). All that is required is a fire-resistive ceiling stretching from wall to wall beneath the structural members (see sketches).

Such membrane fireproofing can be pierced for air-conditioning and electrical outlets safely if the total area of openings is not more than 100 sq in. per 100 sq ft of ceiling. All duct openings and junctures between branch and main ducts must be pro-

TABLE III

FIRE PROTECTION FOR COLUMNS

For 4-Hour Rating

1¾-in. thick gypsum-perlite plaster on self-furring metal lath or metal lath with welded rod spacers on columns

1½-in. thick gypsum-perlite plaster on metal lath with channel furring or metal lath spacers (1¼-in. space)

1½-in. thick gypsum-vermiculite or perlite plaster on metal lath with channel furring or metal lath spacers, 1¼-in. space filled with plaster

Two layers ½-in. plain gypsum lath, chicken wire mesh, two ¾-in. layers of gypsum-perlite plaster (good for 4½-hour rating)

For 3-Hour Rating

1⅜-in. gypsum-perlite plaster on metal lath

1-in. gypsum-vermiculite or perlite plaster on metal lath with channel furring or metal lath spacers, 1¼-in. space filled with plaster

Two layers ½-in. plain gypsum lath, chicken wire mesh, 1-in. gypsum-perlite plaster (good for 3½-hour rating)

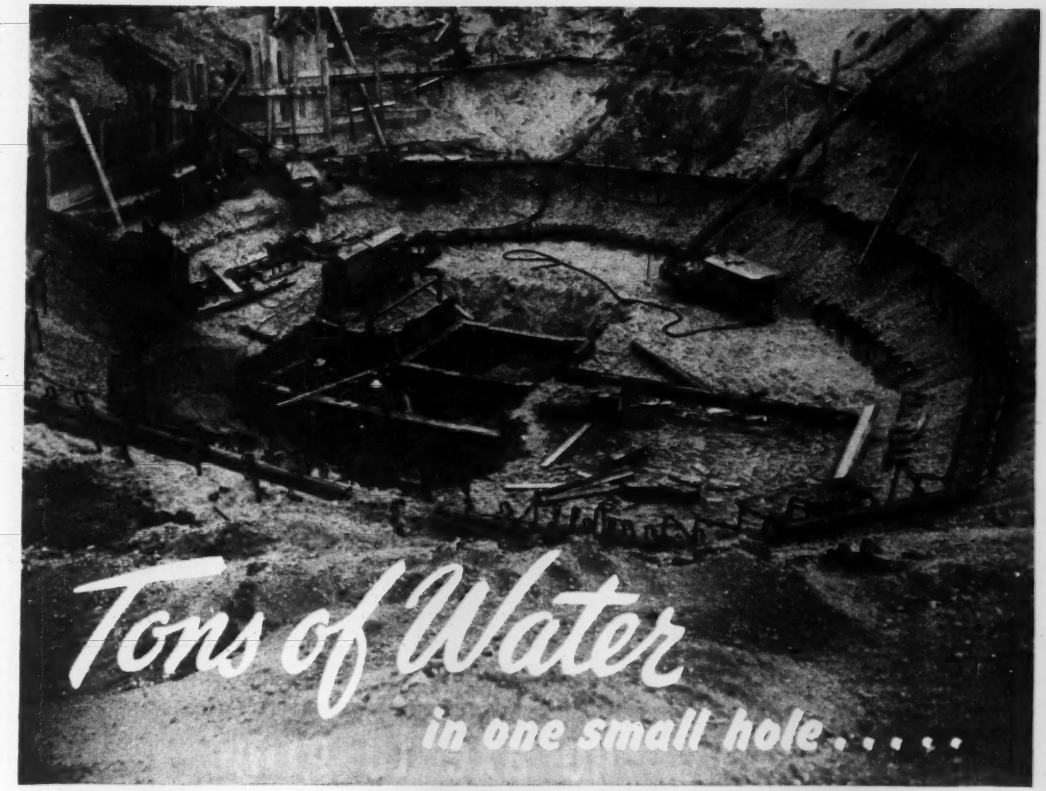
½-in. plain gypsum lath, ¾-in. gypsum-perlite plaster, chicken wire mesh and ¾-in. more gypsum-perlite plaster (good for 3½-hour rating)

For 2-Hour Rating

1-in. gypsum-perlite plaster on metal lath

1-in. gypsum-perlite plaster on ⅜-in. perforated gypsum lath

Note: All lightweight aggregates are mixed with gypsum in standard proportions of 100 lb of gypsum to 2 cu ft of aggregate for scratch coat and to 30 cu ft of aggregate for brown coat.



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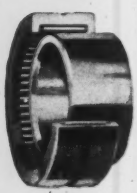

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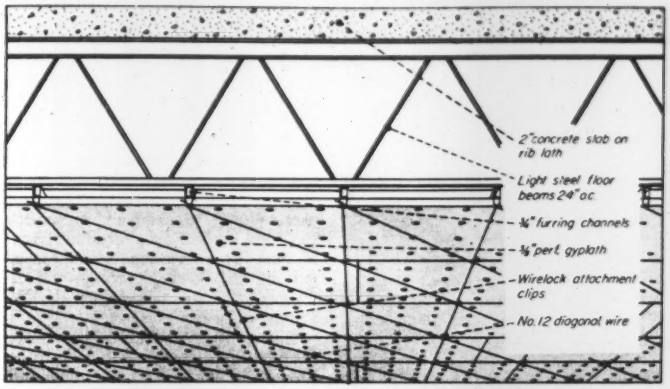


GYPSUM-LATH CEILING with 1 in. of plaster for protecting open-web steel joists may be rated as good for up to 4 hours in fire resistance.

tected with 12-ga, gravity-operated dampers held open with 160-F fusible links. These are the same type dampers required by building codes to prevent the spread of smoke and gases through duct systems.

Two further precautions are advisable: (1) The damper at the duct opening should be covered on the exposed side with two layers of asbestos paper 1/32 in. thick. (2) Membrane fireproofing must extend behind air diffusers to meet the duct opening at the section where it is protected by this damper.

When flush-type troffer lights are used, an opening in the fireproofing can be avoided by keeping the protective membrane continuous behind the fixture (see sketch).

• **Two for price of one**—On occasion, double ceilings may prove economical. They are most advantageous when they can serve simultaneously as sound conditioning, fireproofing, thermal insulation and air distributors. The price of such features installed separately is more than the cost of two ceilings.

The first ceiling is placed below the floor and structural steel. It consists of a combination fireproofing, sound-absorbing and thermal-insulating material, like sprayed fiber on metal lath. The second ceiling, of perforated acoustical tiles, is suspended below the air-conditioning ducts and other utilities. The air-conditioning ducts open directly into the plenum chamber formed by the two ceilings, and the whole perforated pan system acts as a giant air diffuser.

• **Architects estimate savings**—Fire tests earlier this year indicated that open-web steel joists supporting a 2-in. concrete floor and protected on the under side with membrane fireproofing may be eligible for fire ratings up to 4 hours. So the Gypsum Assn. asked Holabird & Root & Burgee, Chicago architects, to prepare a cost comparison of this type of construction with both a flat-slab and two-way slab of reinforced concrete.

According to Lloyd H. Yeager, general manager of the association, the architects reported that for a hypothetical 12-story building, the gypsum-fireproofed construction would cost about 15% less than the more economical of the two reinforced concrete designs.

The building was designed for a 50-psf live load and 20-psf partition load. Three-hour fire resistance was the criterion for columns and floors. Columns were spaced 18 or 20 ft apart. Story height was 9 ft 4 in. for the concrete designs, 10 ft for the steel. The open-web steel joists were spaced 2 ft on center.

The cost comparison, however, does not include such factors as speed of construction, wind bracing, availability of materials, and effect of building height on partitions, piping and ductwork.

In communities where building codes specify fire resistance in terms of hours of resistance in the ASTM standard fire test, lightweight membrane fire-proofing can be used to great advantage with steel framing. With it, you can cut construction costs and save critical materials.

TABLE IV

FIRE PROTECTION FOR FLOOR SYSTEMS

Type of Floor System	Type of Suspended Ceiling
For 4-Hour Rating	
Metal roof deck with 2-in. vermiculite concrete topping; cellular steel floors with 2-in. concrete slab over (2-in. min. air space under the deck); open-web steel joists; steel plate floors with 2½-in. concrete slab over (3-in. min. air space under); beams, girders and trusses	1-in. gysum-vermiculite plaster on metal lath
Beams, girders, trusses, and cellular steel floors with 2½-in. concrete slab over (7¼-in. min. air space under the deck, 2½-in. min. furring space around beams)	⅝-in. gypsum-vermiculite plaster on metal lath, ½-in. vermiculite acoustical plaster
Cellular steel floors with 2-in. perlite concrete slab over (3-in. air space under the deck, 3-in. furring space around beams)	1-in. gypsum-perlite plaster on metal lath
Cellular steel floors with 2-in. concrete slab over (4½-in. air space under the deck, 2½-in. furring space around beams)	1⅛-in. asbestos or mineral-wool sprayed-fiber on metal lath, beam sprayed ¾ in.
For 3-Hour Rating	
Metal roof deck with 1-in. insulation board of shredded-wood concrete on top	1-in. gysum-vermiculite plaster on metal lath
Beams, girders, trusses; open-web steel joists; steel plate floors with 2½-in. concrete slab over (3-in. min. air space under)	¾-in. gypsum-vermiculite plaster on metal lath
Beams, girders, trusses; open-web steel joists; steel plate floors with 2½-in. concrete slab over (3-in. min. air space under); and cellular steel floors with 2-in. concrete slab over (2-in. min. air space under the deck)	1-in. neat wood-fibered gypsum plaster

FINISHED FERTILIZER smells better to compost-plant manager Pettersson than does worthless residue of outgrown town incinerator in the background. Furnace is still in business, however, complementing compost operation. (ENR Staff Photos)

Composting for Profit—II

Garbage to compost: 7 days

IT SMELLS like good, fresh earth. It sells for $68 a ton. And it solves a garbage problem.

Ten tons of compost are being produced each day from organic refuse in a seven-day aerobic fermentation process at Bay Shore, N. Y. Compost manufacturing at its incinerator-and-open-dump site is thus solving a refuse disposal problem for the Town of Islip Collection District.

The district's old incinerator has been relieved of its overload: with garbage removed it gets only the more combustible refuse. And the dump is there for non-combustibles and furnace residue. Composter, incinerator and fill area are combined.

Compost manufacture is a private enterprise. Frazer Long Island Compost Corp. is paid $1 for each ton of refuse weighed into its tidy little plant. At the sorting table—first step in its process—salvageable paper, rags and metal are pulled out for baling and sale. (When the market is poor, sorted combustibles of this type are turned back to the town for burning —with refund of $1 a ton.

Of course, the ideal would be complete sorting of refuse by the town's housewives, so that only garbage would come to the fertilizer plant. An educational effort is being tried, but there always will be some sorting needed and some salvage to sell.

Half a dozen men and a plant manager can operate the $100,000 composter at its present capacity. The men work from 8 A. M. to 5 P. M. (bacteria doing the decomposition work around the clock) and complete their work in a 7-day cycle.

The entirely inoffensive, highly mechanized process is brain-child of Eric Eweson, Swedish-American soil bacteriologist. Backing and promoting has come from Frazer Products, Inc., of New York, making it the Frazer-Eweson composting process—and explaining the firm name. (It's J. W. Frazer, of Kaiser-Frazer.)

This plant in Bayshore—near Long Island's south shore, some sixty miles east of New York—is the first full-scale installation of the F-E process. Smaller installations have been operated in Mount Wolf, Pa., and Union Stockyards, Chicago. Five tons of compost from this latter plant were used to seed the Long Island operation.

Except for the original seeding, the plant takes no inoculating other than an automatic recirculation of process tailings—the 10% or so of finished product too coarse to pass a 6-in. screen.

• **Here's how it works**—Key to the composting plant is its digester. It is here that the aerobic bacteria do their work.

Garbage—fresh, sorted and ground —is conveyed to the top and dropped into the 5,000-cu ft digester, a 14-ft, square 40-ft high wood structure. Some manure goes in with it. Seven days later it is shoveled out at the bottom, a stabilized if slightly sweet-smelling product. Sifting and drying finish the product to a homogenous humus.

The trick is in what happens within the digester.

This structure is divided vertically by three steel grates—making four zones of digestion. In each zone the composting mass bridges the grate openings and remains for a specified period while controlled air is passed up through it. At the end of the period a steel bar pulled back and forth over the top of the grate breaks the material's bridge effect and drops it to the next zone. And so on down. No liquid residue develops.

In zone 1 (at the top) the mass is held for 24 hours. In zone 2 it remains 24 to 48 hours and heats up to 170-175°F as the bacteriological process continues. Zone 3 temperatures drop to 130°F, and fresh air at zone 4 puts a stop to the bacterial action, which at this stage has had its effect.

There is complete and close control throughout the vertical, gravity process. Methods of close scientific con-

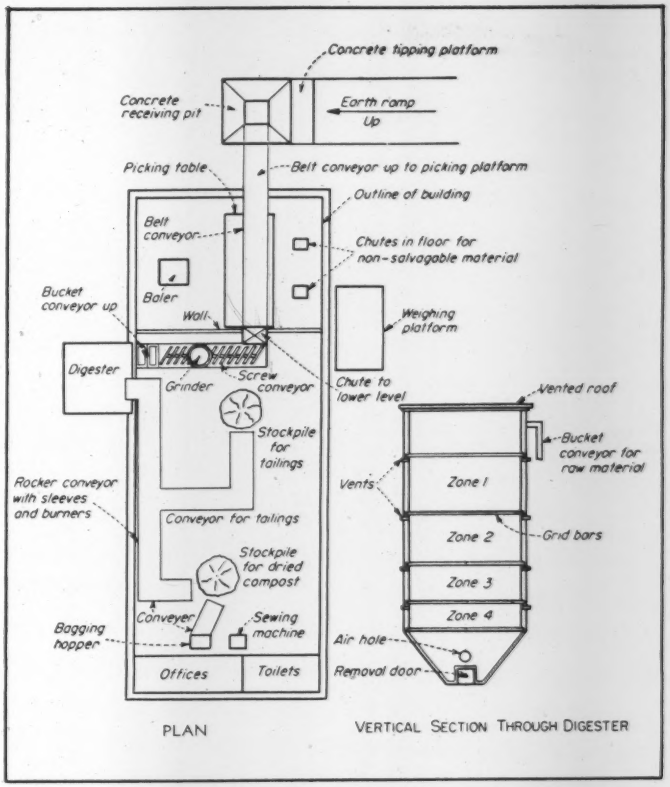
trol and maintenance of aerobic conditions distinguish the process from others currently employed. (In Oakland, Calif., a 70-ton-per-day process has been operated in which composting material is simply piled in the open and turned once in 21 days. See ENR June 26, p. 44.)

• **Air speeds the work**—Use of air is vital to the process. Heated air is added by compressor in lower zones. As it rises through the mass it becomes similar in quality to air normally found in earth—high in moisture content and containing 10 to 50 times as much carbon dioxide as atmospheric air. The CO_2 and moisture form carbonic acid, which helps render the organic wastes assimilable to microorganisms in the decomposing mass, according to Mr. Eweson.

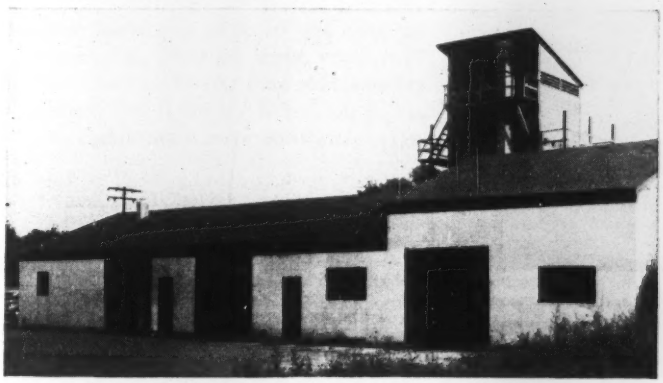
Air requirements can be gaged by temperatures at the various levels or stages of the process. And air passage can be controlled by opening or closing exhaust vents in the sides of the structure at the various zone levels. Too much air can do the process as much harm as too little, says plant manager Malte Pettersson.

From the digester, the composted material is conveyed on vibrating sieves over gas-burners for simultaneous grading and drying. The 10% of product too coarse to pass all screens is discarded as tailings to be used as bacterial culture to seed new batches. The rest is a 30% moisture product ready to stockpile for bagging.

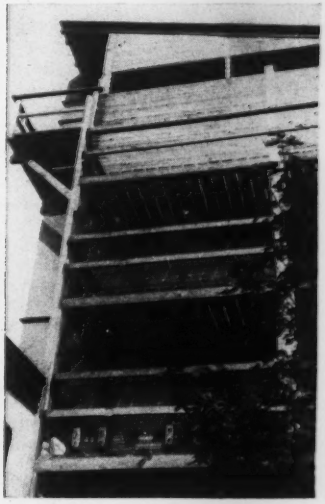
• **Future**—Eric Eweson is in Spain now, getting a second installation of about this same scale started. He is one of the many staunch disciples of the compost school in the chemicals vs. compost division among soil specialists. He doubts that the job of soil rejuvenation can be done on any small scale, and specifically proposes large scale industrial manufacture of compost—by his process. However, he also proposes research to see how chemicals might fortify the compost product.



MECHANIZED PROCESS is aerobic, inoffensive. Assorted conveyors lessen cost of semi-continuous flow. Digester (shown in vertical section) is heart of the plant.



SIMPLE PLANT at Bay Shore, Long Island, N. Y., cost entrepreneurs $100,000 to build. It is the first commercial installation of the Frazer-Eweson process.



TIMBER DIGESTER has vents in its sides for air control.

PENNSYLVANIA TURNPIKE EXTENSION

Topographic survey for 140-mile highway. Ground methods estimate: $415,000 and 2½ years. AERO delivered completed maps 145 days after start for. $83,000.

Saving—$332,000 and 769 days.

BEAR MOUNTAIN HIGHWAY LINK

Topographic survey for 31-mile New York highway. Ground methods estimate: $74,400 and 2 years. AERO delivered maps in 90 days, for $17,500.

Saving—$56,800 and 640 days.

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FORMS ARE READY for gunite application as part of large-scale housing project in Oxnard, Calif. Job included 260 one- to four-bedroom duplex units with 4-in. gunited exterior and interior bearing walls and 2½-in. interior partitions.

Housing project has gunited walls

John B. Jessup
William & Burrows, Inc.
Burlingame, Calif.

TWO CALIFORNIA CONTRACTORS have just completed a $2-million public-housing development at Oxnard that includes extensive use of gunited walls. The 260 one- to four-bedroom, single story, duplex units have 4-in. gunite bearing walls and 2½-in. gunite partitions.

Specifications prepared by Ventura, Calif., architect Harold E. Burket gave the option of gunite construction or concrete block. The low-bidding contractors (a joint venture of Williams & Burrows, Inc., Burlingame, Calif., and Carl N. Swenson Co., Inc., San Jose, Calif.) analyzed costs and decided on gunite. Their bid was $1,934,000, which on a square-foot basis is $8.75, excluding site work (or $7,325 a unit, excluding the administration building).

The buildings have a 4-in. flat-slab floor poured over a paper diaphragm on a base of ¾ to 1½-in. crushed rock. Continuous exterior footings and smaller interior partition footings support the gunite walls that vary in height from 7½ ft at the roof eave to 9½ ft at the ridge. These walls were given a plaster trowel and paint finish on the gunited side and paint alone on the formed side. The composition roofing is placed on 2x6-in. planking on 6x8-in. joists supported by the gunited walls.

• **Form design**—Simplicity of construction and ease of erection were foremost in form design. In general, ⅜-in. plywood panels backed by 2x4-in. studs (two vertical and three horizontal) comprised a form panel. The 4x8 and 4x10-ft sheets were uncut except where necessary. Thus, modules of 4-ft were standard.

Form panels were nailed with duplex nails to a 1-in. bottom plate that was nailed to the slab.

Forms were attached to each other with tie rods placed through holes predrilled in the flange of each panel. The ties were secured with conventional wedge metal clamps. Walers were added to prevent offset between the panels during guniting.

Where an interior partition was joined to an exterior wall, the corner form stud was set back 4 in. from the edge of the plywood panel. This enabled the gunite operator to shoot the otherwise inaccessible spot at a 45-degree angle.

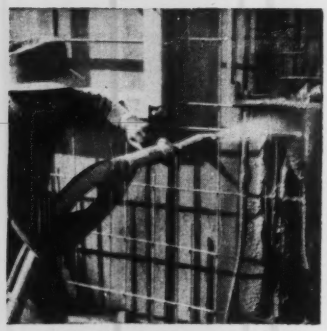
The forms were aligned and braced by 1x8-in. boards attached to the base of the opposite wall. Steel door bucks and steel sash were secured to the forms to permit guniting in place. The mechanical subcontractors also installed their various materials in the walls before guniting began.

Reinforcing consisted of ⅜-in. round deformed bars 11 in. on center both ways in the 4-in. walls. In the 2½-in. walls, 4x4/6x6 mesh was used. The mesh was machine precut to specific wall lengths and heights and was bent for corners so the installation consisted only of securing it to the forms.

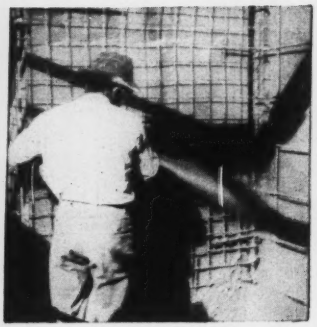
Two-inch thick plates attached to the form panels at the ceiling height formed the top of each wall. Vertical screeding wires were stretched from the plate to the floor at a distance from the forms equal to the thickness of the required gunite wall.

•**Guniting**—Since gunite construction requires a form for only one face of a wall, the contractor faced the question as to which side would be the best. After consulting with the gunite subcontractor, F. W. Case Co., it was decided to shoot the exterior walls from the outside. Thus, the forms were placed on the inside face of those walls. This gave the gunite operators more space to work in and made the cleaning up of rebound concrete easier.

Interior partitions were formed so that the operator could gunite all three interior walls from one position within the building. There were, therefore, some rooms in which no



GUNITE IS APPLIED from the outside where possible.



INTERIOR GUNITING was difficult because of tight working space.

FRESH REBOUND is shoveled from interior slabs and reused.

FORMWORK includes preplaced metal door buck and electrical boxes.

CORNER FORM STUD is set back from wall intersection to ease gunite operation.

SCREEDING starts as soon as gunite is in place. This is an exterior wall.

guniting was done—the walls being shot either from the adjoining rooms or the outside. The closet walls were the most difficult to gunite because of the small space in which to operate.

For this particular job, the mix was 10 sacks of cement per cubic yard of lightweight aggregate—an expanded shale made locally.

The gunite operator regulates the amount of water so that the concrete is wet enough to adhere to the wall, yet dry enough to support itself. The nozzle is aimed at the bottom of the form and slowly raised as the concrete begins to cover the reinforcing steel. The operator is assisted by another man who directs high pressure air against the gunited wall to remove rebound.

The amount of rebound is a sizeable quantity; it is cleaned up immediately following an application of gunite. Rebound from the interior partitions was shoveled from the floor slab out through the window openings. Then it was wheelbarrowed back to the gunite machine and mixed with new aggregate in proportions of 1 to 5. Rebound remaining at the end of the day's operation was used as rockfill for work on the neighboring concrete walks.

After the house has been given its initial guniting, the process is repeated, bringing the walls out so that the screed wires are just covered. Screeding boards drawn along the wires remove the excess concrete and the guniting job is complete.

• **House per day**—On the Oxnard job, two gunite machines would operate on each house, and in most cases the houses could be completed in one day. However, work could be stopped at any point in the operation, as there is no visible dividing line between two separate applications of gunite.

Particular care was taken to avoid rebound or rock pockets not visible at the time of shooting. Such pockets are likely to occur in tight corners, around embedded electrical fixtures and at window and door frames. The few pockets that did occur were patched later with cement grout.

Stripping the forms from the gunited walls presented no particular problem. However, even though the panels remained waterproof and lasted out the job for as many as ten uses, a raised grain did occur. This texture was transmitted to the finished wall. Accordingly, grinding and polishing were required before the walls were considered satisfactory.

The contractors believe a solution of this problem would be to use another material that could withstand the rugged action of guniting and yet possess the easy handling characteristics of the plywood forms. But such material must contain nothing that would be injurious to the paint or plaster surface treatment that may be applied to the concrete.

At Oxnard, however, instead of grinding, the contractors applied a plaster coat. This gave a more uniform texture and when painted provided a pleasing appearance for home interiors.

The superintendent on this job was William Carr, the general foreman Joseph Denker, and the inspector Elmer Hagerman. Representative for the PHA was Ralph Stewart, project engineer, and officials for the Oxnard Housing Authority were George R. Wallace, executive director, and Joseph L. Barnett, Jr., technical director.

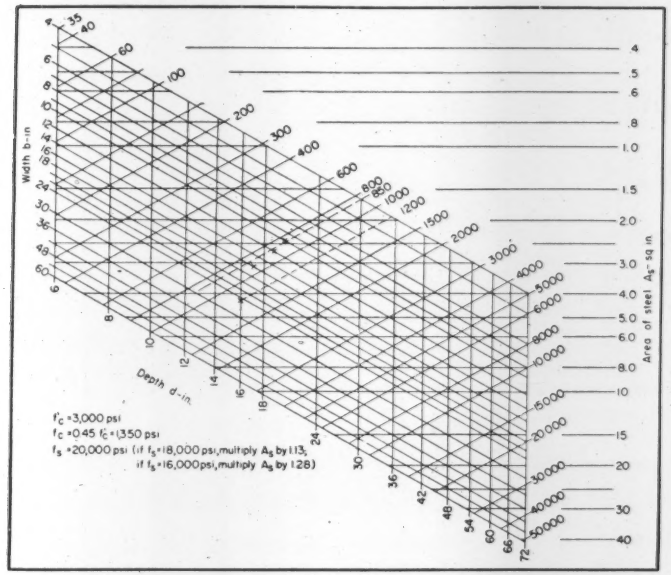

Width b-in
Depth d-in
Area of steel A_s-sq in
f'_c =3,000 psi
f_c =0.45 f'_c =1,350 psi
f_s =20,000 psi (if f_s=18,000 psi, multiply A_s by 1.13;
if f_s=16,000 psi, multiply A_s by 1.28)

Chart for direct concrete beam design

The diagram above provides a simple, direct method for designing single-reinforced rectangular concrete flexural members. It is also useful for reviewing beams that have balanced reinforcement or those that are under-reinforced.

For design, select values of b and d that intersect at or below the moment line and read off the A_s required for a balanced section. A b-d intersection above the moment line will result in an underdesigned member. If a larger-than-necessary concrete section is to be used, A_s can be determined from the intersection of the moment and d lines.

For review, the intersection of A_s and d determines the resisting moment of the steel (M_s). Then intersect b and d; if this moment is equal to or greater than M_s, it is the resisting moment of the concrete (M_c). If greater, of course, the beam is under-reinforced and M_s is the strength. The chart is not satisfactory for over-reinforced beams.

The diagram reproduced is for 3,000-psi concrete using $f_c = 0.45f'_c$ and $f_s = 20{,}000$ psi. Similar charts can be drawn for 2,500 and 3,750-psi concrete. On the 3,000-psi chart, if $f_s = 18{,}000$ psi, multiply A_s by 1.13; for $f_s = 16{,}000$ psi, multiply A_s by 1.28.

• **Examples**—Design a member to resist a bending moment of 850 in-kips.

Follow the moment line for 850 and select a suitable combination of b and d; for example, a 10x20, with $A_s = 2.4$ sq in.; 12x19, $A_s = 2.7$ sq in. 14x18, $A_s = 2.9$ sq in.; 16x17, $A_s = 3.1$ sq in.

Design a member to resist a bending moment of 1,200 in-kips when overall depth is limited to 18½ in. Therefore, $d = 16$ in.

Intersect d and moment line for 1,200 and read required b and A_s: b-25 in., $A_s = 4.3$ sq in.—James N. Robinson, *Structural Engineer, Oak Ridge, Tenn.*

Tests show canal loads lighter than assumed

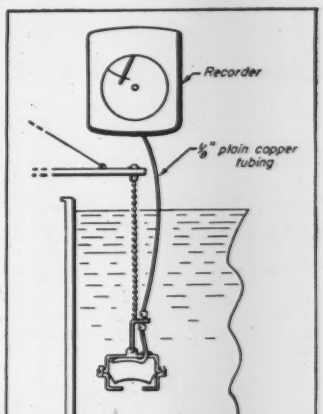
New Orleans, La., will base design of future drainage canal structures on some actual measurements recently made on flow level versus ground water level. Accurate measurements of loads on canal bottoms indicate the city can save by designing its structures lighter than heretofore.

Tests to determine actual loads were made with liquid level recorders used throughout the system in operation to measure rate of rise of water, duration of flow and rate of removal of water by pumping stations. At a typical location, project engineers installed two recorders equipped with diaphragm-box measuring elements. One of these elements was placed inside the canal, measuring the canal water level. The second diaphragm box was installed through the bottom of the canal to record the liquid level of the outside ground water. This measuring element was set in a perforated steel pipe enclosed in a shell fill.

By recording both of these measurements simultaneously at one location, the actual load on the canal bottom was determined over an 8-month period. Variations of pressure on the bottom of the canal were charted, and their relation to water level within the canal was studied.

From the recorded data, it was determined that the loading factor in use, only an assumption, had been more conservative than was warranted. In future construction of rigid frame drainage canals, invert slabs can be designed safely containing less reinforcing steel because of supporting effect of ground water in actually "floating" the canal.

Tests were made with Foxboro liquid level recorders installed to indicate level measurements on two charts. Comparison of the charts told the story.



LEVEL RECORDERS checked and compared liquid levels inside and outside canal.

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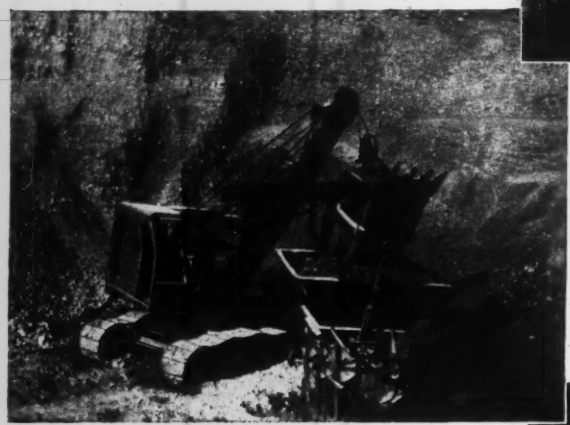

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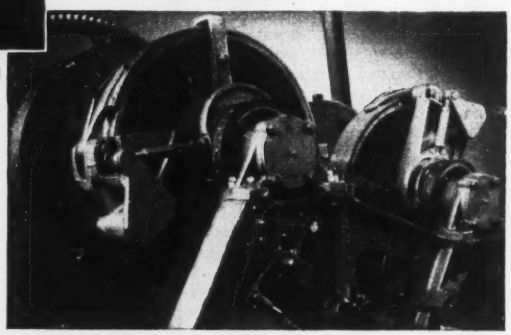

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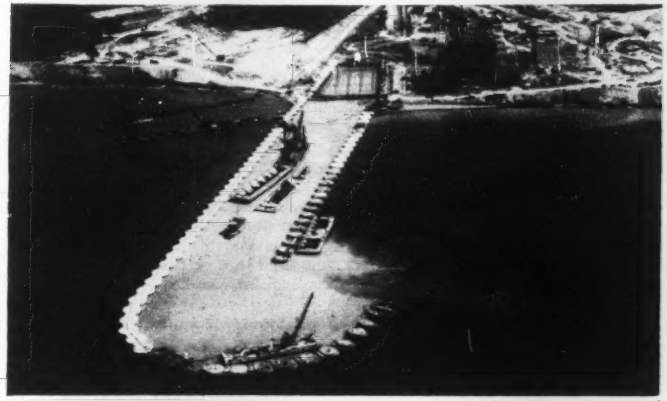


ROUND-CELL SEAWALL under construction for an electric plant shows the type of cell and fillet which will be used for the second Cleveland seawall.

Seawall unit is round, firm and full

The Cleveland division of the Great Lakes Dredge and Dock Co., last month completed a $1.4-million seawall for the protection of Cleveland's freeway system. In the spring of 1953 the firm expects to start a $2-million contract for another seawall in the same area.

The new contract—for about 3,500 ft of wall—was taken for $200,000 less than the city engineer's estimate. "We bid our experience," said a spokesman for the company, in explaining the low bid.

Here is the experience, upon which the company is banking to give it the edge on the new job:

Construction of the first seawall, to protect fill for a shoreline freeway extension (ENR Aug. 14, p. 47) took from April 1951 to Sept. 1952, to construct.

The seawall was basically constructed of 92 elliptical cells of sheetpiling. The piling was driven about 20 ft into the lake bed, using a double-acting steam hammer and a wood template to maintain the desired shape.

Use of the elliptical shape was made possible because the lake bottom along the line of cells was firm clay.

The cells were filled with coarse lake sand—800 cu yds for each. The fill was delivered by barge to the site after being dug from sand shoals off Fairport, Ohio.

Filling was done in gradual stages, because filling one cell completely would have caused distortion in the adjoining cells.

Protection against scouring action at the juncture of the lake bed and the lake face of the wall was obtained by dumping 13,000 tons of riprap as a stone toe along the face on a one on two slope about 8 ft high.

• **Storms and stresses**—Two storms hit the project during construction.

In Aug. 1951, a lake disturbance damaged five sheets and a Y-piece. The next month eight sheets and another Y-piece were damaged.

Pulling the interlocked sheets proved a tough job. An extractor was required to get them out.

Wind-and-wave driven debris bent 1¼-in. steel bars (protruding for the capping) to 45 degree angles.

During each storm the driving rig had to be pulled into shelter, work on the bobbing template was stopped and sheet steel could not be handled because the wind was strong enough to take the steel like a sail.

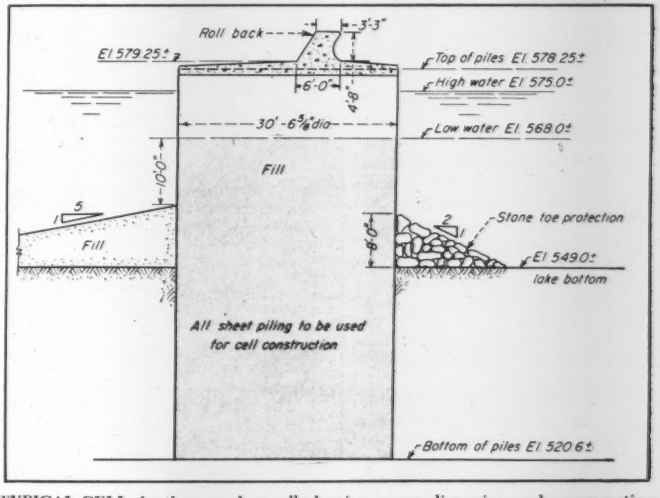
• **High water**—Great Lakes was bothered by inadequate working space caused by the high water level of the lake. When the project was started there was a freeboard of about 2½ ft but when the project was finished crews were pouring concrete for the capping with a freeboard of only six inches.

• **The new wall**—On the new project Great Lakes will encounter a soft clay bottom.

The new seawall will have, instead of elliptical cells, circular cells (98 of them) about 31 ft in dia and joined by interconnecting areas or fillets that will also be filled. The circular cross-section is expected to increase stability—although at the cost of additional piling.

Another advantage of the circular shape is the fact that the cells can be filled immediately upon erection instead of the graduated process necessary when using the elliptical shape.

Some saving will be effected in the



TYPICAL CELL, for the second seawall, showing average dimensions and a cross-section of the rollback which has a length equal to the cell's diameter.

concrete capping of the wall. The previous wall was capped by a slab with an overhang on both sides. The new contract calls for a slab with no overhang over the sides of the round cells.

An added feature of the new concrete capping is a heavy concrete roll-back, intended to cause turbulence in incoming waves. The roll back stands above the concrete capping almost five feet, with a concave face towards the lake.

Under the direction of James A. Dubbs, a Great Lakes vice-president, construction is expected to start in April, 1953.

Gore losing appeal must serve jail term

Lester E. Gore, former secretary of the Philadelphia Zoning Board, who had been convicted of lying to the Special Grand Jury (March 1950) investigating Philadelphia municipal corruption, lost his appeal to the Pennsylvania State Superior Court and entered the Eastern State Penitentiary at Philadelphia last week to serve a one-to-three year term.

Gore, former Republican ward leader in Philadelphia, was found guilty of denying before the grand jury that he accepted $675 for getting zoning variances.

Meanwhile in another case arising from the grand jury graft revelations, a jury trying William J. Carr, a former city building inspector was discharged after it notified the court it could not agree on a verdict.

Carr was freed in $500 new bail pending another trial. Carr pleaded not guilty at the trial and denied the charges of graft taking.

1250-stall garage

A 1,250-stall parking garage, second in capacity only to the Union Square Garage, will be constructed in San Francisco's downtown area by unnamed private interests.

Occupying a 275x137½ ft area, the garage would have seven stories above ground and two floors underground. All space would be used for parking, with the exception of the street level floor, which would be leased as commercial store space.

The San Francisco Parking Authority, which also is considering construction of two or three downtown garages, said it welcomed investment of private capital in development of off-street parking facilities.

$50-million development planned

Albert M. Greenfield, financier and real estate man, has gathered together top financial and business interests into a syndicate ready to invest upward of $50 million in developing four blocks of the Pennsylvania Railroad's so-called "Chinese Wall," which is now being demolished.

The Chinese Wall carried the PRR lines into Broad Street station in midtown Philadelphia, along Market Street from the Schuylkill River where the tracks crossed to the 30th Street Station, now the railroad's main terminus in the city.

Matthew McCloskey & Co., contracting firm, is razing Broad Street Station and the wall at a faster-than-scheduled pace.

The same firm has the contract to build and extend westward several tracks that will run underground below the site of the old wall.

• **Development**—ENGINEERING NEWS-RECORD was told that the Greenfield group and the PRR are negotiating at present and that if an agreement on price can be reached, the group will take over the wall site from Penn Square to 18th Street, with this tentative, block-by-block building plan:

• Penn Square to 15th Street—a 1,000-room air conditioned hotel built to handle the biggest of conventions.

• 15th to 16th Streets—a department store, first new major store in Philadelphia and envisaged as having about as much floor space as the existing Wanamaker store.

• 16th to 17th Streets—an office building with 350,000 sq ft, making it one of the biggest such buildings in the city.

• 17th to 18th Streets—smaller stores and specialty shops and perhaps a bus terminal.

In addition, the group would negotiate for two more blocks of railroad property northwest of the PRR suburban station to provide parking facilities.

J. M. Symes, the PRR's executive vice president has been handling discussions for the railroad. He said that in addition to the Greenfield syndicate, there are other prospective developers in negotiation to purchase the site.

The price is understood to be about $10 million. Symes says he hopes a deal with one of the developers can be made by January, 1953.

The demolition is scheduled to be completed by April. If no delays occur, the new development may be started by late next spring.

Greenfield says that if handled properly the development would anchor business in the center of the city and halt the flight of merchandisers and capital to suburban areas. Also it can supplement the city finances with more than $1 million in new taxes.

As now planned, the syndicate would lease both the hotel and department store buildings to operating companies. Greenfield says he anticipates no trouble in getting together with the railroad on price.

• **Planning commission** — However, Greenfield says his group has been somewhat concerned over a tentative planning commission proposal to restrict building to about 70% of the area. The group things that this is "unrealistic" because the project—considering the tax load—couldn't return a profit of 30% were it in open space.

Edward Hopkinson, Jr., resident partner at Philadelphia of Drexel & Co., chairman of the Philadelphia Planning Commission, told ENR that the 70-30 ratio has been eliminated. Hopkinson said the commission's ideas are flexible: "We will insist on decent setbacks and some open space, with a harmonious plan." He thinks that the Greenfield plan meets these requirements and "would be a tremendous asset for the city."

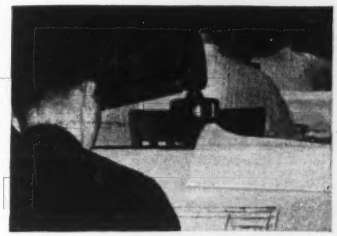
The planning commission earlier had proposed a radically new idea for the area's development—the "Penn Center" plan, with a sunken shopping concourse from Penn Square to 18th Street, lined by shops and with three skyscraper office buildings.

Jasper likes grinders

Household garbage grinders are proving highly successful in Jasper, Ind.

The community of 5,000 undertook a complete changeover to the sink disposal units in 1949 when Hog Cholera shut down the feeding of raw garbage to hogs (ENR Nov. 17, 1949, p. 54).

Over 75% of Jasper's population now have grinders. The rest have to dispose of their own wastes independently. No increase in water use has resulted, but the sewage treatment plant had to be enlarged. State law permitted bond financing; the city became purchasing agent, and citizens bought equipment from the city, on an installment plan when desired.



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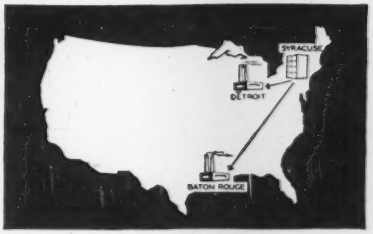

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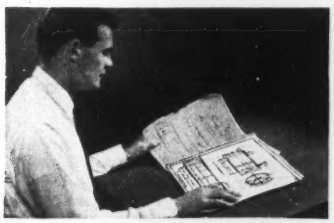

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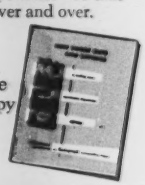

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Critical water shortage threatens Texas city

Dallas, Tex., last week found itself with a water shortage probably more critical than that in any other major city in the country.

U. S. Army Engineers reported that Lake Dallas, the city's only source of water at present, held only four months' supply. Dallas Water Superintendent Karl F. Hoefle, who had believed that the reservoir held twice that amount, hurried home from vacation and clamped rigid restrictions on water use. Water used went down 72 mgd to 49 mgd under the emergency conditions.

The Engineers, under the direction of Col. H. R. Hallock of the Fort Worth district office, surveyed the drought-shrunken reservoir with sonic depth-sounding equipment.

The resulting report showed that Lake Dallas, located about 25 mi northwest of the city on Elm Fork of the Trinity River, contained 7,840 mg (24,000 acre-ft) of water. Dallas and two smaller cities (Highland Park and University Park) within its limits now use about 2,000 mg a month. Water use tapers off in cool weather and this factor combined with consumption restrictions could possibly stretch the present supply to eight months.

A break in the severe three-year drought that has given several Texas cities water supply problems could, of course, build up Lake Dallas. The lake level, 25 ft below the spillway, is the lowest in the quarter-century history of the reservoir.

Last week Dallas issued some hastily drawn plans for dealing with the situation: Three deep wells are to be dug to augment the supply with about 9 mgd. Sixteen mgd will be tapped from smaller wells already in existence.

But Hoefle and other Dallas officials are not counting on an end to the drought. Several other emergency plans are being considered to alleviate the shortage. These are:

- To tap the Red River north of Gainesville. Dallas Water Department engineers have found a place north of Gainesville where water from the Red River could be pumped a mere mile and a half to Pecan Creek, a tributary of Elm Fork which supplies Lake Dallas. This plan presents difficulties: Permission would have to be obtained from the federal government, Oklahoma, Arkansas, Louisiana and Texas. In addition, Red River water has a hardness ten times that of the present Dallas water supply.
- To tap the West Fork of the Trinity

(Continued on page 53)

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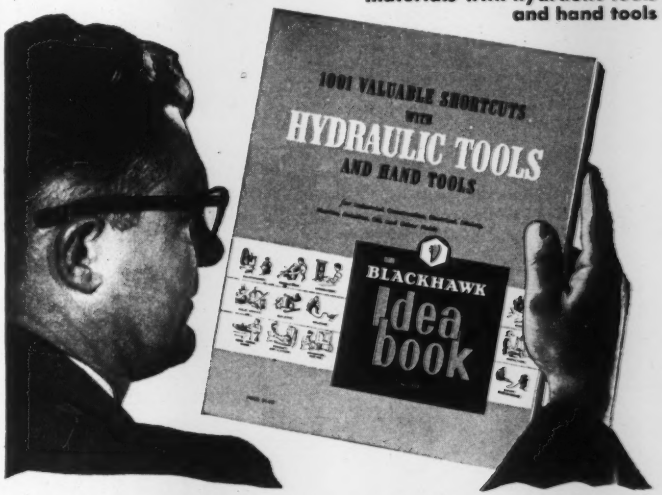

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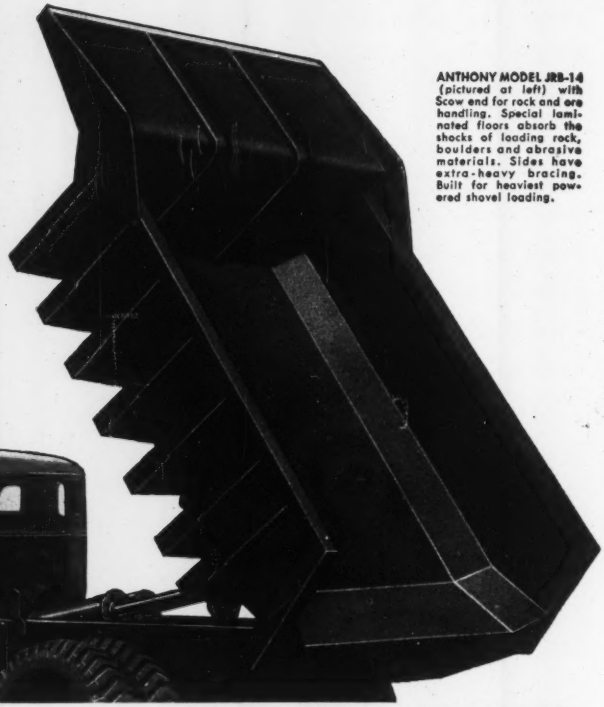

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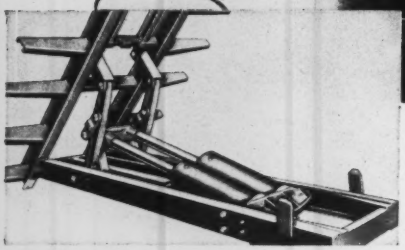

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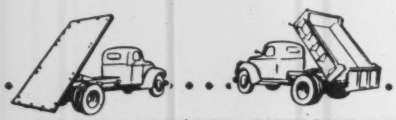

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below Bridgeport Dam (a Fort Worth water source) and run a pipe line about 10 mi to Denton Creek and thence to the new Grapevine Dam. The dam, now completely dry, could then supply water to Dallas.

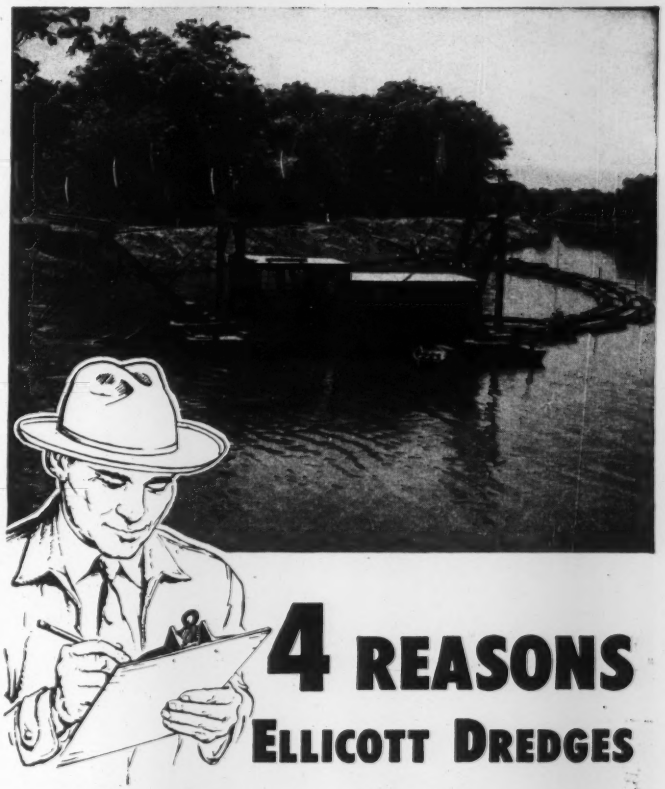
- To let water from Bridgeport Dam run down the badly polluted West Fork to Dallas. This plan looks doubtful even if the water were later treated.
- To drill several deep wells to the Trinity and Paluxy sands near large water mains in the Trinity River Valley. Water from such wells could be pumped directly into the mains without treatment.
- To drill several shallow wells near the Bachman and Carrollton water treatment plants. This water could be treated and then pumped into the city's water system.
- To use water, in extreme emergency, from the city's White Rock Lake, a lake now used for recreation. This water could be sterilized but not filtered and it would go into the mains in a murky state.

• **Red River tap**—The tapping of the Red River is getting the most attention at present. Water softening tests are going on and the Army Engineers have approved. Hoffle has started looking for necessary pipes and pumping equipment. If necessary materials could be obtained, construction would take only two months, he said.

Water use in Dallas dropped sharply after newspapers carried headlines of the shortage. The City Council passed an ordinance providing a fine of $50 to $200 for breaking water rules on a first offense and completely cutting off water service for a second offense.

Ironically, Lake Dallas started to run dry just two years before it is scheduled to be swallowed up by the $24-million Garza-Little Elm Dam now under construction five miles further downstream from Lake Dallas on the Elm Fork. This construction will triple Dallas' potential water supply.

• **Other Texas cities**—The drought was also strongly felt by other Texas Cities: San Angelo has a 44-day supply left. To supplement its supply it is using well water . . . Corsicana is adding 300,000 gal of well water to its Lake Halbert source daily . . . Waco is down to a four months supply, but water for Waco can be tapped from the Brazos River . . . Other cities are looking for new sources of supply although the drought is expected to break soon.



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4 ***Highest possible output*** at the lowest operating cost is engineered into every Ellicott Dredge. Operation is economical no matter whether the Unit is large or small.

For more information about Ellicott Dredges and how they can make more money for you, write for our new General Catalog No. 825, which shows over 100 views of Ellicott Dredges. Address: ELLICOTT MACHINE CORPORATION, 1603 Bush Street, Baltimore 30, Maryland.

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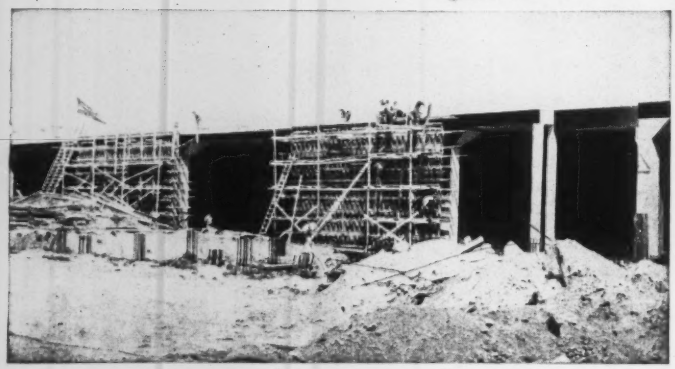
JENNITE J-16
Surface Seal



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SEALING STRUCTURAL CONCRETE WITH J-16 ELIMINATES COSTLY FUTURE MAINTENANCE DUE TO DAMAGE CAUSED BY WATER SEEPAGE

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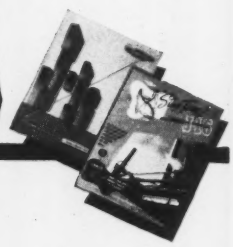
- J-16 lends itself to ready installation with glass or cotton fabric membrane reenforcement.

Protective maintenance pays profits

For complete details on Jennite J-16—Write for Specifications and these two brochures.



MAINTENANCE INC.
WOOSTER, OHIO

MUNICIPAL

$100-million housing job proposed for Greenhills

Development of the $100-million housing project of the Cincinnati Community Development Co. in North Greenhills, Ohio, took another step forward late last month.

Earle J. Wheeler, president of Community Development, announced that Ladislas Segoe & Associates have been appointed to prepare a master plan for the new city.

Segoe, town planner with offices in Cincinnati, has been selected to serve as principal planner by Robert Gerholz of Michigan and Richard J. Seltzer of Philadelphia, who have contracted with Community Development to built the Greenhills project.

Walter S. Schmidt, president of Frederick A. Schmidt, Inc., land planner and developer, is local representative of Gerholz and Seltzer.

Work on the plan, which will determine the size, design and allocation of land within the proposed development of more than 7,500 families, has now been started, with expectation that it will be completed in three to four months. Actual construction will get under way this spring.

• **Planning experience**—Segoe was in charge of the local planning staff in preparing the official city plan of 1925 for Cincinnati and also served as general consultant in the preparation of the metropolitan plan of 1948.

Segoe has prepared comprehensive city, county and regional plans for many municipalities and other agencies in Ohio and Kentucky, as well as for Detroit, San Francisco and many other large cities.

The Segoe organization has arranged for professional association on this project with various other planning engineering firms, including David S. Geer & Associates of Bloomfield Hills, Mich., and Alfred Leferber & Associates and Edward Larson, consulting engineer, both of Cincinnati.

Site planning studies for the North Greenhills area will be advanced as rapidly as possible, in order that preliminary plans may be ready for the study of a special panel of the Urban Land Institute which will meet in Cincinnati during the week of Dec. 7. The panel will comprise 25 of the outstanding financial and building interests in the country.

The study by the panel is considered highly desirable in order that

(Continued on page 56)

TRACTION You can trust

4-wheel drive PAYLOADER®

It takes traction in all kinds of going to get jobs done on schedule . . . traction you can rely on the year 'round . . . that handles big loads quickly, easily and economically.

Hundreds of contractors and public works departments own Model HM "PAYLOADERS" . . . a large percentage have placed repeat orders proving their satisfaction with the traction, flotation and all-around utility of this unusual wheeled tractor shovel. They also value its ability to get to the job fast under its own power . . . the way it can do so many jobs — dig, load big hauling units, bulldoze, spread, back-fill, carry, lift, lower, pull and push.

Operators like its ease of operation, thanks to power-boosted steering, fingertip hydraulic control, the quick, easy shift between the four forward speeds and four reverse speeds. Once you see the Model HM "PAYLOADER" in action you'll want one too, so see your "PAYLOADER" Distributor or write The Frank G. Hough Co., 772 Sunnyside Avenue, Libertyville, Illinois.

WRITE for catalog on the 1½ yd. Model HM or the six other "PAYLOADER" sizes down to 12 cu. ft. bucket capacity.

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You'll find
DEMING SUMP PUMPS
in the most unexpected places!

● Ordinarily, you'll find Deming Sump Pumps on such jobs as sump drainage, or pumping heavy viscous or hot liquids in chemical or metallurgical work or performing many other "normal" jobs of liquid handling.

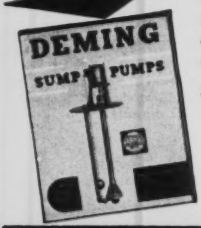
But you'll also find these versatile pumps as component units of other equipment, such as illustrated above. Here you see a standard Fig. 4610 Deming Sump Pump as a component part of the Kelly Sulphur Filter, engineered and manufactured as a standard "PACKAGED" unit by Oliver United Filters Inc.

Function of the Deming Sump Pump is pumping a mixture of filteraid and pre-clarified molten sulphur through the Kelly type pressure filter. This operation precoats the filter leaves with a layer of clean filteraid . . . thereby aiding the clarification of the dirty sulphur during the processing and producing an easily discharged cake.

SEND FOR BULLETIN No. 4607

Service of the Deming Sump Pump involves a capacity up to 60 gallons per minute at discharge heads not exceeding 20 PSI at temperature from 280 to 290°F.

Somewhere in the complete line of standard Deming Sump Pumps, you, too, may discover the most efficient and economical solution to your problem of liquid handling.



Suggestion:
Send for illustrated SUMP PUMP BULLETIN 4600A.

THE DEMING COMPANY
536 Broadway • Salem, Ohio

DEMING DEMING DEPENDABLE PUMPS **PUMPS**

North Greenhills plan may have the benefit of the constructive criticism of competent and experienced builders.

Here is a roundup of other housing news:

Portland, Ore.'s, housing authority, which in September took over 411 acres of land and 5,100 housing units from FPHA, (ENR Sept. 25 p. 65) has served eviction notices on 1,000 of its tenants.

The authority announced that the families—who represent about 40% of present tenancy in the temporary housing units—must move out by Thanksgiving Day. Under state public housing laws, in force since the federal government sold out, their incomes are too high to allow them to qualify for residence.

The law rules that maximum incomes for families continuing to live in the project may range from $2,900 for a couple without children to $4,350 for a family including seven minors. For new applicants, rent schedules are $600 a year lower.

• **Phoenix, Ariz., housing boom**—The postwar housing boom in Phoenix continues to surpass all expectations. More than 2,500 individual residences have been erected in the metropolitan area since Jan. 1 at an investment of more than $22 million, exclusive of land.

Latest in the mounting list of construction projects is a 600-home development and shopping center representing an investment of $6 million.

Other contractors have announced plans for at least another 1,600 before the year ends. Other developments awaiting FHA financing will account for another 2,000 homes to be built in the near future.

Monorail rapid transit studied in Los Angeles

The Los Angeles County Board of Supervisors has released a total of $92,000 for use of the Los Angeles Metropolitan Transit Authority, state-created agency aimed at developing an overhead mass transit.

Of the funds, $42,000 is for administrative functions of the authority, and $50,000 is to be used in a study of economic engineering factors involved in mass rapid transport. Under the state legislation, the authority is limited to considering a monorail system with a 500-sq mi area covering all of San Fernando Valley and an 8-mi wide strip from the valley along the Los Angeles River to Long Beach.

BIG "CAT" THAT GREW IN BROOKLYN

New Catalytic Refining Unit Produces

50% MORE HIGH-QUALITY MOBILGAS FOR NEW YORK AREA THIS WINTER!

Flying Red Horse Leadership Proved Again!

SOCONY-VACUUM has just completed building one of its largest and most modern Catalytic Cracking Units . . . right here in the metropolitan area. This new unit provides greatly expanded capacity for producing the original *Flying Horsepower* gasoline.

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These new units are producing increased quantities of Mobilgas and Mobilgas Special for the metropolitan area . . . plus super high-power gasoline ingredients to assure top winter pep and performance from your car.

From now on you'll enjoy: split-second starts plus faster warm-up, smoother acceleration... powerful anti-knock performance, even in highest compression cars!

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What Does it Cost to Move a Yard of Earth?

Three MARION 191-M shovels are handling the excavation work for two giant dams on the Missouri River. Their records in soil, clay, shale and rock are making excavating history that will be significant in heavy construction and mining.

Big dipper capacity, tremendous power and real speed (18-second cycle time—as fast as your smallest machine) make the MARION 191-M an outstanding performer where big yardages are needed. What is the cost of moving a yard of dirt, rock or ore? The 191-M provides new and interesting answers. Write for the details.

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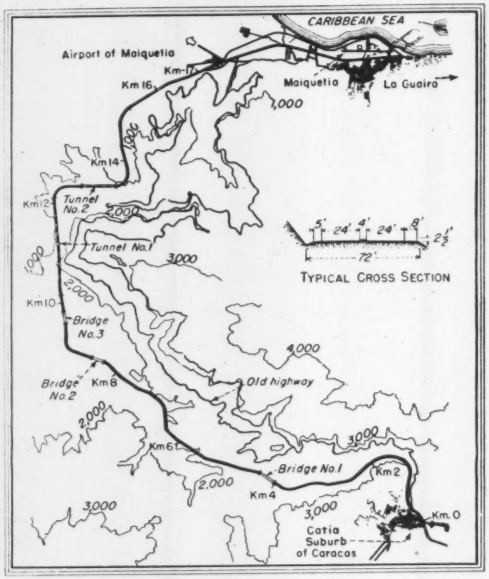
Marion, Ohio, U. S. A. • from 3/4 cu. yd. to 45 cu. yds.

Offices in Principal Cities Throughout the World

MARION 191-M, the world's largest loading shovel, at Ft. Randall Dam.

MARION 191-M
Provides New Answers!

PORTAL OF TWIN-BORE TUNNEL eventually will contain ventilation building. Longer tunnel is 5,900 ft.



NEW ROUTE has 36 curves compared with 360 for old which is 20 mi long. It is 6 mi, La Guaria to Caracas as the crow flies.

Caracas-La Guaira highway to cost $7 million a mile

RECORD-BREAKING CUTS are one reason 10½-mi Venezuelan superhighway will cost $70 million. This one's 900 ft long, 300 ft deep.

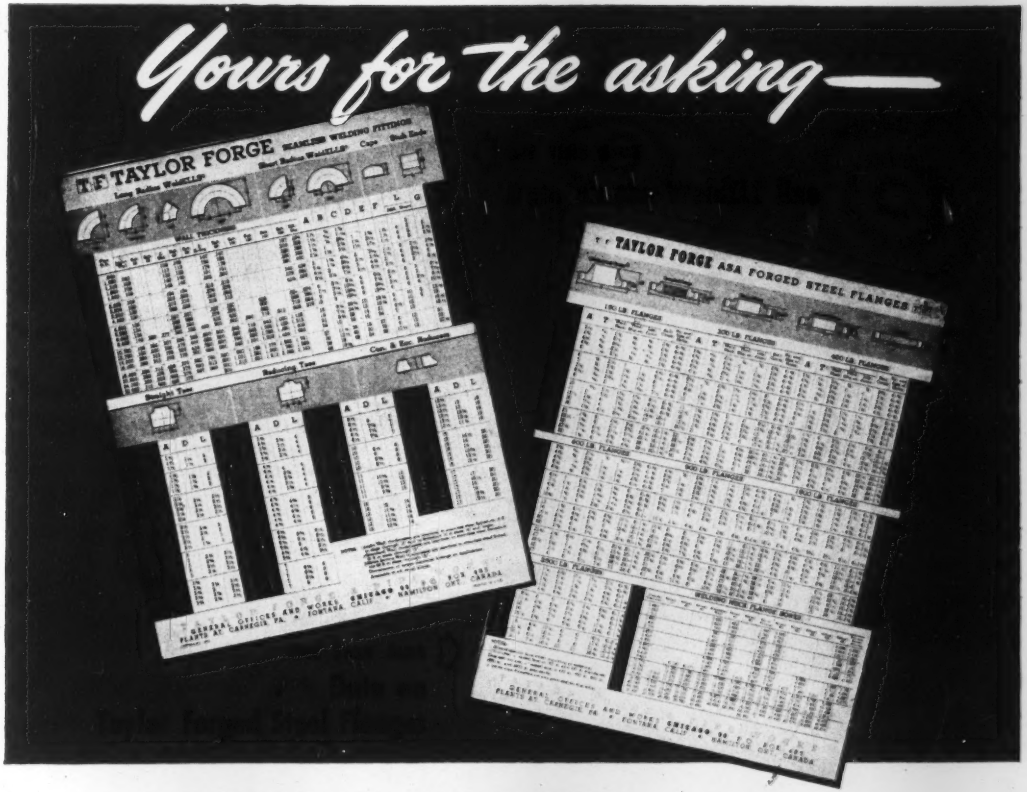
Two long tunnels, three unique concrete arch bridges and some of the toughest cut and fill work ever encountered mark what probably will be the world's most expensive highway—the 10½-mi route linking Venezuela's capital city of Caracas with its main seaport at La Guaira. The road is scheduled for completion in the latter part of 1953 at a total cost of $70 million. Toll financing will be used, making this the first such highway in Latin America.

Caracas, a rapidly growing city of 700,000 population, is a distribution point for nearly 50% of Venezuela's imports, received at the La Guaira port. The capital city also is recipient of most passenger and freight traffic from the International Airport of Maiquetia, situated right near La Guaira, which handles 200 flights daily.

• **Old road tortuous**—At present, the only connection between these two feeders and Caracas, located in a 3,000-ft high valley but surrounded by 6,000-ft coastal ranges, is a precarious two-lane road 20 mi long requiring 1 hr to traverse. It has 360 curves, some

(*Continued on page 62*)

Yours for the asking—



A VOLUME OF DATA

. . . covering welding fittings and forged steel flanges . . .

ON A SINGLE SHEET

Here is just about the handiest tool ever devised for the pipe designer. Data on welding fittings and flanges that otherwise could be found only by plowing through many catalog pages and tables have been ingeniously condensed on the two sides of the durable letter-size card illustrated above.

One side covers the broad WeldELL line of Taylor Forge welding fittings. For every nominal pipe size, ½" through 30", it shows the wall thickness for every weight of every fitting in every available material. It also shows all required dimensions of all types of fittings.

The other side covers the world's most complete line of forged steel flanges. For every nominal pipe size, ½" through 24", it gives all essential dimensional and bolting data for all types of flanges in all weights. A particularly useful table (see reproduction) is that showing welding neck flange bores which enables you to determine the I.D. of any nominal pipe size without separate calculation. Thus the sheet gives you O.D. and I.D. of any weight of pipe.

The card is varnished to make it stand the steady usage you are certain to give it. To obtain your copy see your Taylor Forge distributor or **MAIL THE COUPON.**

Please send me one of your fitting and flange sheets:

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192
WAUKESHA MOTOR COMPANY • WAUKESHA, WIS.
NEW YORK • TULSA • LOS ANGELES

with a radius of only 48 ft, grades up to 12%, a width of only 18 ft at certain points; and is frequently blocked by landslides—certainly not the type of connection to handle 6,000 cars and trucks daily.

Since 1950, the Venezuelan Ministry of Public Works, with the aid of American, French and local contractors, has been at work on a new four-lane divided highway, designed to reduce driving time to 15 min. Construction is most advanced on the three long-span open-spandrel arch bridges. Their totally unprecedented design and construction has already been described (ENR Sept. 11, p. 28). Just recently holed through are the two tunnels, 5,900 and 1,560 ft long.

Both tunnels are entirely in rock, and each consists of two separate bores. All bores are horseshoe-shaped, 29 ft between inside of vertical walls and 20 ft from roadway to crown of intrados. Beneath this is a concrete ceiling 14 ft from the road, forming an air duct space in the arch. Lining is of reinforced concrete 2 ft thick.

Each of two traffic lanes in each bore is 12 ft wide. The wearing surface is asphaltic concrete 4 in. thick. A 3-ft wide sidewalk will be built on the right hand side.

• **Ventilation a problem**—Ventilation of the tunnels, particularly the longer one, was the most difficult design problem. Fresh air will be introduced from the upper air duct through ports in the tunnel ceiling. In general, vitiated air is to go out tunnel portals. Actually forming three of the four tunnel ends are reinforced concrete ventilation buildings which house fans and electrical equipment.

A central control board is contained in a separate building near one of the portals. On it are mounted carbon monoxide recorders, remote control for all ventilating fans, and indication of traffic signals. A local automatic telephone system connects stations in the tunnels and all ventilation buildings with the central control room.

In most cases there will be three fans in each duct section, two to provide normal ventilation and one as standby. They are the horizontal vane axial type driven by two-speed winding squirrel cage motors. However, a few larger units will be powered by direct-connected wound rotor motors.

• **Additional air shafts**—The upgrade bore of the longer tunnel, on a 3½% slope, is too long to ventilate from the portals only. Two short drifts were driven horizontally to open air at

(*Continued on page 64*)

Amsco Chains Super-Toughen With Use

How AMSCO Manganese Steel Chains Acquire Progressively Greater Resistance to Impact and Abrasion.

AMSCO Chains are made of Manganese Steel—the "Toughest Steel Known." They are produced in many standard and special shapes by American Manganese Steel Division—largest producer of manganese steel for all industry. Users of AMSCO Chains benefit by unusual freedom from expensive chain replacement, breakage, maintenance-down-time and other problems caused by impact and abrasion conditions.

AMSCO Manganese Steel Chains have the unique ability to work-harden with use. In rough service, they develop a surface hardness as high as 500 Brinell. They also acquire a super-hard glass-like polish that helps shrug off grinding abrasion. All AMSCO Manganese Steel products—tough when produced—possess the extra-value quality of actually increasing durability with in-use battering and grinding.

Actual case histories prove that AMSCO Manganese Chains outlast ordinary chains by more than 6 to 1 where impact and abrasion exist. For example, on one conveyor operation, ordinary chain had to be completely replaced every three months. When AMSCO Manganese Steel Chain was installed, only a small fraction of the links were replaced during a test period of over 24 months.

If you use chain, and desire a more durable alloy, you are invited to contact AMSCO. There's a good chance we can save you money and provide chains that will outlast your service life expectations.

Drag Line Type Chain—Mining & Excavating

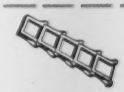
AMSCO Chain Assumes Many Forms To Serve Industry. A Few Are:

Detachable Chain—Bucket Elevating

Pinlock Type with Cast-on Dog—Log Hauling

840 Series Chain—Bucket Elevating

Rivetless Chain—Mining



Clinker Drag Chain—Cement Milling

AMERICAN Brake Shoe COMPANY

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Offices in principal cities. In Canada: Joliette Steel Limited, Joliette, Quebec.

about the third point of the tunnel. Exhaust fans will be placed in one of these and blower fans in the other, thereby reducing length of air ducts to practicable limits.

Lighting will be provided by two continuous lines of fluorescent lamps contained in glass tubes, one in each sidewall near the ceiling. Lamp output will be intensified at tunnel entrances to ease the transition from daylight to artificial light. At night, normal output will prevail. Battery-fed incandescent lamps will standby throughout the tunnels.

Tunneling proceeded along normal lines. Drilling was performed from a rail-mounted jumbo, drilling and shooting the full face. Progress averaged 20 ft per three-shift day. A total of 900,000 cu yd of excavation was removed. The rock remaining, Augen gneiss and shale, was supported by sets of 8-in. H beams spaced 2 to 6 ft apart.

Air entrained 3,000-psi concrete is being used for the lining, while 4,000-psi concrete is being used for the ceiling. Arch and sidewalls are being poured monolithically in 33-ft sections, then the ceiling also in 33-ft sections. A complete 33-ft section is finished daily. At this date, concreting the shorter tunnel is completed while it is just starting in the longer. Total cost of both tunnels is expected to run to $20 million.

• **Highway design**—The highway itself is not too far advanced, only the cut and fill work being in progress. But since actual paving of the 10¼-mi route can be done fairly quickly, all aspects of the job should be finished together.

Designed for AASHO H-20 loading, the highway will be surfaced with asphaltic concrete. Two 24-ft wide roadways will be separated by a 4-ft central mall. On the mountain side, 5 ft of shoulder will be stabilized; on the other side there will be 8 ft of shoulder plus a 2½-ft high parapet wall. The highway will be illuminated throughout its length.

Maximum grade will be 6%. Instead of 360 curves, the new road will have only 36 and none with a radius less than 1,000 ft. Design speed is 50 mph.

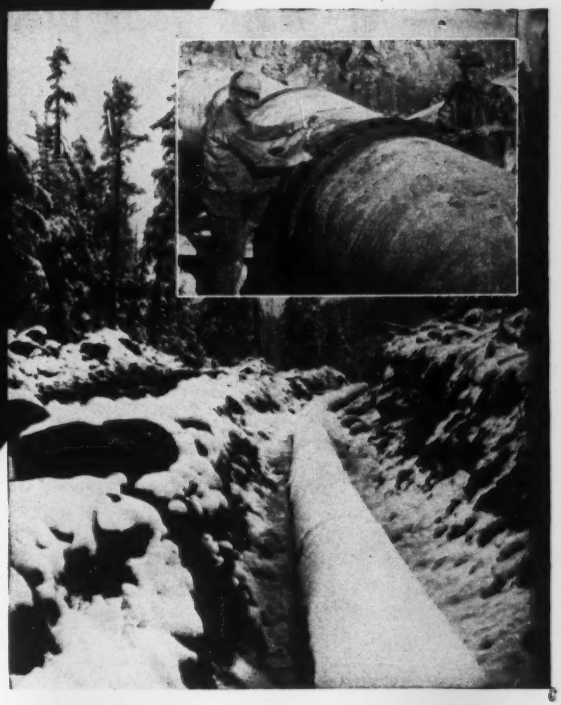
Cuts and fills of extraordinary size are involved. The largest cut is 300 ft deep and 900 ft long, while the deepest fill is 140 ft. Thirteen of the fills range from 78 to 140 ft deep.

• **First toll road**—As previously mentioned, financing of the $70 million

(*Continued on page 67*)

DENVER, COLO.—At 9,400 ft. elevation and 10° temperature, construction of Denver's new 54" Ranch Creek line went forward with steel pipe joined by Dresser Couplings. The line carries water to the Moffat Tunnel to help provide for Denver's rapid growth.

A DRESSER-COUPLED STEEL LINE delivers water cheaper



No matter if your problem is terrain . . . weather . . . labor . . . or time . . . the cheapest way to deliver water to the place where it turns into revenue is with a Dresser-Coupled steel line. It's the experienced engineer's way to get a superior line and still reduce *installation* and maintenance costs . . .

Once you have discovered the ease of construction of such a line, you'll know why more and more engineers specify them every year. Long, strong sections of steel pipe are easily put in place and quickly joined with factory-made, virtually foolproof Dresser Couplings. Construction proceeds rapidly even over rugged terrain like that shown here.

Leakage losses are eliminated. *Controlled gasket pressure*, provided by the bolting up process in a Dresser Coupling, is your assurance of the correct *sealing* pressure all around the joint. Resilient Dresser gaskets absorb stresses from vibration, contraction and expansion, yet keep the joint "flexible-tight".

Maintenance is cut to the bone, too. Dresser Couplings last for life, and the absence of heat in joining prevents damage to glass-smooth pipe linings. High carrying capacity is sustained.

Experience all over the world proves that a Dresser-Coupled steel line gives you the ultimate in performance and economy. See your Dresser Sales Engineer or write our Bradford Office for literature.

Be Sure you, too, get the best line at the best price. Put steel pipe and Dresser Couplings in your specifications.

DRESSER

"FLEXIBLE-TIGHT"

COUPLINGS

Dresser Manufacturing Division, 59 Fisher Ave., Bradford, Pa. (One of the Dresser Industries). Warehouses: 1121 Rothwell St., Houston, Texas; 101 S. Bayshore Highway, South San Francisco, California. Sales Offices: New York, Philadelphia, Chicago, Houston, South San Francisco. In Canada: 629 Adelaide St., W., Toronto, Ont.

Will Strange Foreign Laws

— Ruin your pleasure trip?
— Be disastrous to your business?

AUTOMOBILE LAWS in foreign countries frequently are strange indeed. Some countries prevent you from entering until you have complied with their laws. Others hold certain types of serious accidents to be crimes. And if you are guilty, the verdict usually is accepted as proof of your liability in any civil suit for damages that follows. Remember, too, the automobile insurance you have here at home probably does not protect you there.

Whether you are touring abroad for pleasure or operating a fleet of company vehicles, make sure your insurance protection will safeguard you wherever trouble may strike.

Provide yourself with sound protection through the American Foreign Insurance Association . . . protection written by experts who know the laws of foreign countries . . . protection conveniently serviced by claims agents in countries where your business is located or where you travel for pleasure.

Consult your insurance agent or broker! He will be glad to get full information for you—from AFIA.

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AN ASSOCIATION OF AMERICAN CAPITAL STOCK FIRE, MARINE AND CASUALTY INSURANCE COMPANIES PROVIDING INSURANCE PROTECTION IN FOREIGN LANDS

project is unique for Latin American countries. Toll charges will be levied in an attempt to pay the road off in 20 years. The highway will have no access other than at the two ends, the northerly terminal having short stretches leading to La Guaira and Maiquetia.

Director of the Venezuelan MOP is Dr. Gerardo Sanson, with Dr. Henrique Siblesz in charge of the entire project. Smillie & Griffin, New York City consulting engineers, designed the tunnel. Morrison-Knudsen Co. of Venezuela is the tunnel contractor, with C. Dugan Graham in charge. Electrical and mechanical equipment, as well as the earthmoving units, are U. S.-manufactured. Local Venezuelan forces are constructing the highway.

Pipeline crosses stream in 1-hour operation

An unusual construction feat—laying eight pipelines simultaneously in one hour into the bed of a German river—has been completed recently to form a link between the Shell Refinery at Harburg, on the south side of the stream, and a new site for storage tanks on the north side.

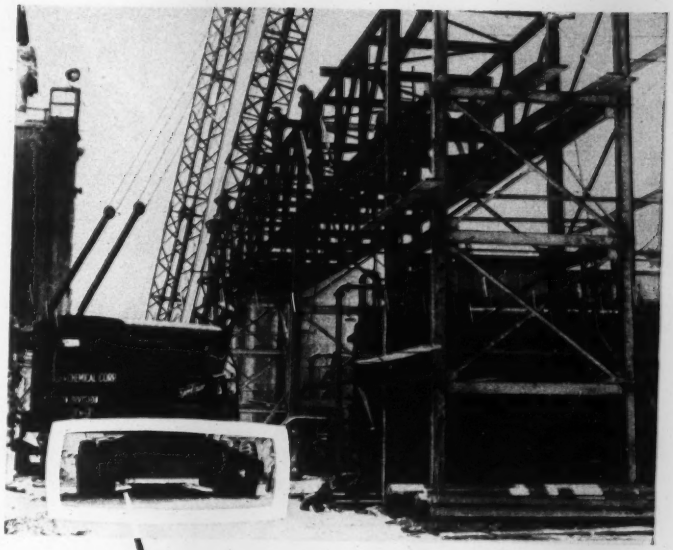
Owing to the density of river traffic (Suder Elbe River near Hamburg), and complications due to the rise and fall of the tide, it was not possible to lay the pipes by floating them into position and lowering into the bed of the river.

The pipes, 4 of 10 in. in dia, 2 of 8 in. in dia, and 2 to 4 inches in dia, had to be placed across a quarter-mile wide section of the stream.

They were first put down side by side on a continuous steel plate, held in correct alignment by "U" bolts secured through wooden cross members that were placed at frequent intervals. The pipes were protected against corrosion by thick coatings of bitumen and glass fibre wrapping.

The complete assembly was then laid out on a launching way consisting of greased railway lines at right-angles to the river, and the approaches on both the launching and landing sides were cut back to ensure an easy contour down to the river bed. A launching nose with upswept bows, reminiscent of war-time landing craft, was affixed to the leading end of the pipe assembly.

The launching nose and the assembly pipe, weighing 160 tons in all, was connected to a 2-inch steel cable laid across the river, attached to three locomotives operating on a railway siding within the Harburg Refinery on the other side of the river.



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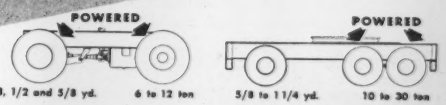

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At a given signal, with careful coordination by telephone, five sets of traffic lights and walkie-talkie radio, the pipes were drawn at a speed of 2-3 miles an hour, along the launching way and across the river, laid in a 6 ft channel dredged in the waterway bed.

International Briefs . . .

• **Australia plans conservation**—Present plans for water conservation in Australia provide for an expenditure to exceed $280 million, not including the huge Snowy Mountains scheme now under construction. The largest proposed expenditure would be in New South Wales, where an 8-dam program for the Hunter River would cost nearly $18 million; in Victoria, where extensions to the Big Eildon Reservoir now being carried out and other projects will cost about $23 million; and in Queensland, where more than $70 million is for water conservation.

• **Add to highway**—Another stretch of the Guatemalan portion of the Pan American Highway (known locally as the Roosevelt Highway) has been opened to travel. The 44-mile section, built at a cost of $1.5 million, extends northwest between Guatemala City and the town of Patzicia.

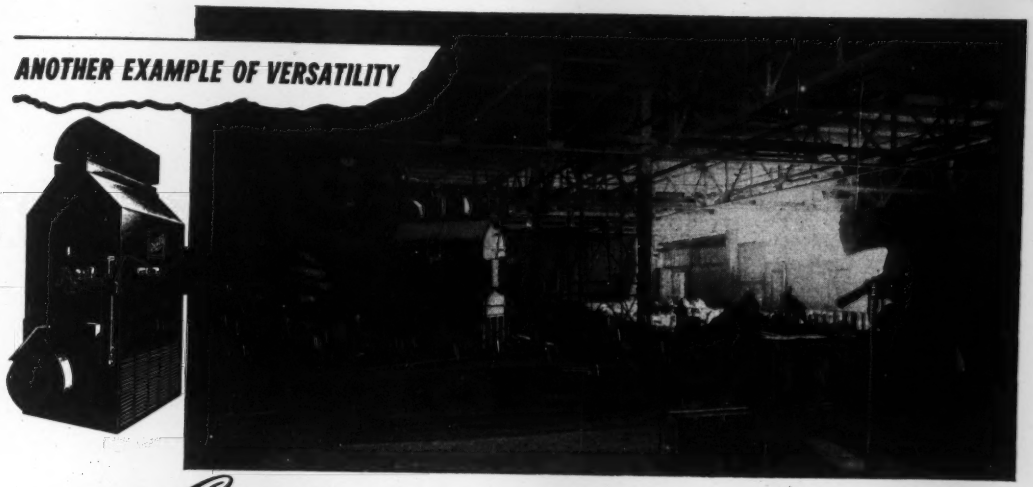
• **Industry for New Zealand**—The New Zealand government is pushing ahead with its plans to establish a pulp and paper plant, to give the country a fourth major export (dairy products, wool and meat are the other three). The project would exploit the Kaingarao forest—said to be the largest man-made forest in the world.

• **Philippine bids up**—U. S. contractors are invited to bid on some of the 11 items of work recently advertised by the Philippine National Power Corporation, as part of the Agno River hydro project. Items up for bid include completion of access roads, erection of bridges, diversion of water, drilling and grouting, earthmoving, and excavation. Harza Engineering Co., Chicago, is consultant.

• **Mexico pushes roads**—Mexico's Department of Public Works is pushing fast on two new main highways: A Pacific Coast road to stretch from Nogales to Mexico City, and an isthmian highway from Coatzacoalcos to Salina Cruz on the Pacific.

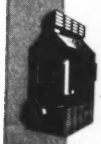
• **Factories for Israel**—The Israeli government has launched an $11 million low-rent factory construction project at Tel Aviv, in the hope of attracting small-scale private enterprise.

ANOTHER EXAMPLE OF VERSATILITY



DRAVO *Counterflo* HEATERS DO DOUBLE-DUTY FOR FORD MOTOR COMPANY CONSTRUCTION PROJECT

Construction of the new Ford Motor Company Engine Plant in Cleveland called for temporary heating during the winter months of 1950-51 so the building schedule could be maintained. Six Dravo Heaters were installed to serve a two-fold purpose:



COMFORT HEATING—The Dravo Heaters maintained a 40° F. temperature inside a 405,000 sq. ft. area when outside temperatures were 0° F. . . . operated 24 hours per day . . . distributed and recirculated heat throughout the working area with a maximum air throw . . . eliminated the need for salamanders or bonfires to keep workers warm, thereby reducing fire hazards.

PROCESS CURING OF CONCRETE—The Dravo Heaters kept the ground from freezing so concrete could be poured during sub-freezing weather. Heaters helped cure concrete quickly . . . were easily moved to any location to fit job requirements.

DRAVO HEATERS OFFER YOU . . .

LOW INITIAL COST—users report 30% to 60% savings.

EASY INSTALLATION—fuel, electrical and exhaust connections are only requirements . . . no duct work.

LOW FUEL CONSUMPTION—burns gas or oil . . . readily converted . . . direct-fired.

QUICK HEAT—fast warm up . . . heat starts when heater is turned on.

LISTED-APPROVED—listed by Underwriters' Laboratories, Incorporated . . . approved by American Gas Association . . . acceptance by Factory Mutual Engineering Division of Dravo standardized safety control circuit.

AUTOMATIC CONTROLS—on-off or modulating controls.

MOBILITY—can easily be moved to any location to suit requirements.

FLEXIBILITY—can be mounted horizontally or vertically on ceiling, walls or floor.

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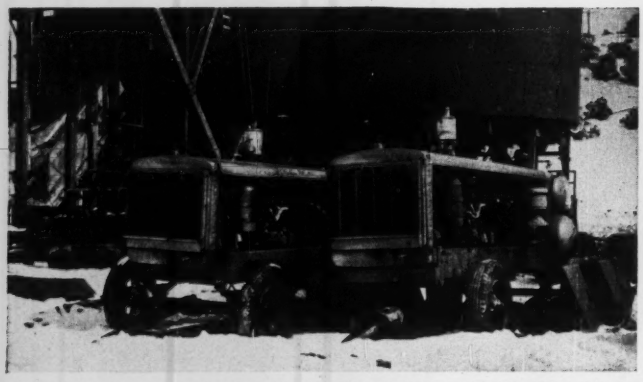

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Rugged tubular chassis and drill carriage of the G-300 WAGON DRILL provide rigidity and strength without undue weight. The tubular "H" structure, that supports the drill carriage, affords great flexibility, stability, and minimizes vibrations. Designed to take full advantage of the high drilling speed and strong rotation of the CP 4-inch 70-N Drifter, the all-around sturdy construction of the G-300 maintains correct alignment under most difficult conditions.

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AN OLD MASTER reflects on an active career in sanitary engineering. (ENR photos)

Rutgers loses Rudolfs by retirement

Willem Rudolfs—consultant to consultants—is retiring Jan. 1, 1953. Leaving a 33-year record of significant accomplishment behind him at Rutgers University, this grand old man of sanitary engineering will make the break clean; he will return to his native Holland to enjoy life at a more leisurely pace than his longtime schedule of teaching, research and consulting has permitted.

Not the least of the legacy he will leave on departing his adopted United States is the long list of leaders in the sanitary engineering field who have studied "at Rutgers with Rudolfs."

On a par with the men themselves is the philosophy of education out of which they developed. And this is Professor Rudolf's story. Anticipating his retirement, ENGINEERING NEWS-RECORD interviewed the professor to get that story.

As a bit of background, let it be recorded briefly that Willem Rudolfs was born in Wangeningen, The Netherlands, Feb. 13, 1886. He studied at the government university there; Pasteur Institute, Paris; University of Illinois; then he came to Rutgers as a research fellow Jan. 1, 1919. In 1921 he won his PhD as a biochemist in entomology—first in this country. And in 1921 he took over water and sewage research of the State Agricultural Experiment Station at Rutgers in New Brunswick, N. J.

His department there was to be based strongly upon the concept of combining engineering science with study of sewage and industrial wastes treatment from the biochemical standpoint. He says it was the first graduate school set-up to include work in all four components—engineering, chemistry, bacteriology and general biology—of advanced sanitary engineering. An engineering graduate entering the course would naturally get a heavy workout in the other three components.

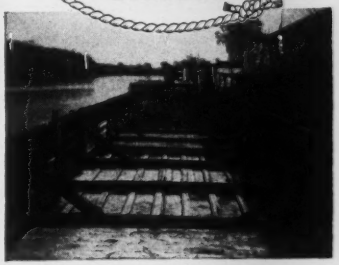
Convinced that there is "no room in any undergraduate curriculum to make experts in the field of sanitary engineering", Professor Rudolfs insists that 18 months should be the minimum of study for a master's degree.

His constant aim has been to turn out well-rounded men—men with ideas.

(Continued on page 72)

31 years on the river

BUT NO DECAY IN THESE WOODEN BARGES



IN 31 YEARS of hard service, this barge, made of Koppers Pressure-Creosoted Wood, has never required repairs because of decay.

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"Industrial wastes form an enormous field of sanitary engineering."

The sanitary engineer from a graduate school should be able to direct research, to write, and to meet people; he must be an ambassador, a public relations man, says Rudolfs.

"Developing these abilities takes time in the field. Students can start higher if given this training in school."

How is this accomplished?

"You work on your problems and you take time off for classes." Actual employment conditions are simulated; regular hours are kept; students work cooperatively. Reports must be submitted periodically; progress on hard, intensive research must be presented and defended in seminars intended for constructive criticism.

This method is rigorous, but both pleasant and constructive, says its ruddy-faced author. Emphasis is on ideas. "Thinking must be stimulated; it can't be spoon-fed," says Willem Rudolfs. He deplores courses of study in which "they chew over that darn textbook, A to Z!"

Research projects at Rutgers are chosen largely for their immediate practical value as means of increasing knowledge of the art. There is no trial and error stuff—experiment for experiment's sake.

Professor Rudolfs early recognized the importance of industrial wastes as a problem in sanitary engineering. For some 15 years he has done consulting work for industry on its liquid wastes. And for the last 10 to 15 years the emphasis in his research department has been largely on industrial wastes.

Result of this appreciation of industry's needs is the placing, currently, of almost all his graduate students with industry—at salaries generally ranging around $6,500 a year.

"Industry is the best field for well-

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"Men with ideas . . . succeed."

trained sanitary engineers", says the sure-footed professor. He should know. He has done his part to make it so by his constant missionary work with some 30 to 40 industries for which he has done consulting work. He has tried persistently to sell them on the importance of employing a sanitary engineer for all water, waste and air-pollution problems—and on the importance of having him report directly to management.

"Industrial wastes form an already enormous field of sanitary engineering that is still growing very rapidly. It stands today where sewage work stood in 1925. But its upsurge will be faster," he feels.

Also in the future, he sees renewed interest in by-products from wastes (water, fertilizer, food). He is convinced we are not near the ultimate in biological treatment; that it is still a fertile field.

He sees a tendency to lessen degree of treatment and believes it is good, as a step. "Half a loaf is better than none, and three-quarters is still better." Full treatment can be approached gradually.

There will be terrible pressure from industry for change in methods of measuring pollution effect, foretells Rudolfs. And he admits present standards are not all applicable, proper or equitable. Some so-called "toxic conditions" don't hold when they get in the streams. Much more information is needed on what streams can do for themselves. And at Rutgers, in an attempt to answer this question, a controlled stream is being set up into which researchers will feed known contaminants to watch their effect. That information will change present thinking on stream capacity to assimilate wastes, he believes.

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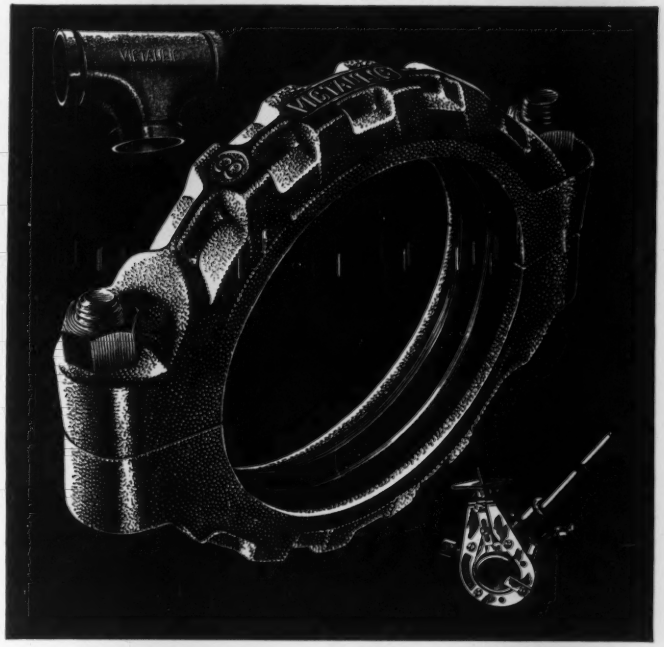

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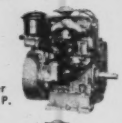

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MEN AND JOBS

The clean streams idea will grow in strength; but the sooner it is realized that it can cost two and three times as much to effect 95% treatment as to assure 85% removal of pollutants the better, he says.

"It is no more proper to waste money or effort than to waste natural resources."

He sees direct oxidation—catalytic oxidation—of specific industrial wastes as a great hope for the future, but says it's a long way off for sewage. Sewage is too complex, no single catalyst can work with it. With industrial wastes, however, specialized organisms can be found to help in the oxidation of specific wastes.

Professor and Mrs. Rudolfs will travel a good bit abroad—but at a pace befitting retirement. He looks forward to a first-hand look at European sanitary engineering developments, which he feels fell behind some 20 years ago. Today he sees England as coming again to the fore in new work. And he is anxious to investigate water supply work in Portugal which he feels has taken great strides engineering-wise of late—largely without notice.

Willem Rudolfs will leave the U.S. shortly afterward. With him will go respect and gratitude of a profession appreciative of his contributions. Behind will remain the contributions, and the hard-working men with ideas his tutelage has nurtured.

He is outstanding proof of his own creed: "If a man works hard and has ideas, he will succeed."

Board member since 1947, John Jackson heads AISC

John E. Jackson, president of Pittsburgh-Des Moines Steel Co., Pittsburgh, Pa., last week was elected president of American Institute of Steel Construction, Inc.

Jackson, a member of the institute's board since 1947, had served as first vice-president of the institute for the preceding two years.

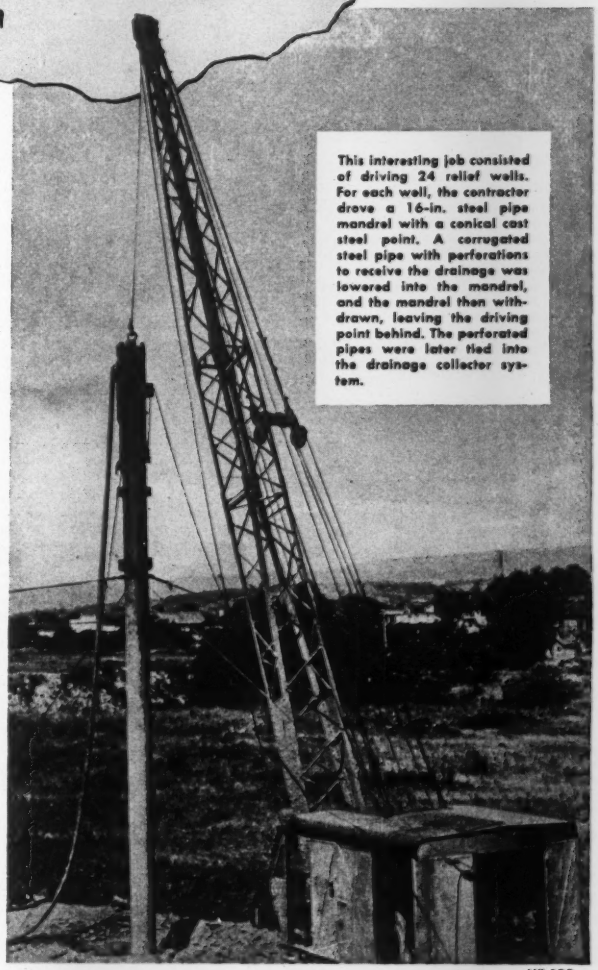
As president he succeeds R. D. Wood, chairman of Mississippi Valley Structural Steel Co., Chicago.

Earle V. Grover, president, Apex Steel Corp., Ltd., Los Angeles, Cal., was elected first vice-president of the institute, and N. P. Hayes, president of Carolina Steel & Iron Co., Greensboro, N. C., was elected second vice-president. James M. Straub, president, Fort Pitt Bridge Works, Pittsburgh, was re-elected treasurer.

L. Abbett Post was re-elected executive vice-president and M. Harvey Smedley, secretary.

"We cannot praise our McKiernan-Terry Hammer too highly!"

says the Wagner Construction Company about Susquehanna River drain well job.



This interesting job consisted of driving 24 relief wells. For each well, the contractor drove a 16-in. steel pipe mandrel with a conical cast steel point. A corrugated steel pipe with perforations to receive the drainage was lowered into the mandrel, and the mandrel then withdrawn, leaving the driving point behind. The perforated pipes were later tied into the drainage collector system.

"We attribute most of the success of this job to the *constant efficiency* of our McKiernan-Terry 9-B-3 Double-Acting Pile Hammer," stated Mr. H. E. Wagner of the Wagner Construction Co., Kingston, Pa.

The contractor went on to say, "We developed a unique but simple method of putting down seepage relief wells behind an existing levee on the North Branch of the Susquehanna River near Kingston. It required *a constant flowing action* of the driving hammer to keep the 16" pipe moving through a *very hard strata* of cement gravel 25 to 40 feet underneath the surface.

"The hammer performed so smoothly that we were able to place these pipes practically *within an inch* of the required depth, and during the entire operation experienced no difficulty whatever. In fact, *we cannot praise our McKiernan-Terry Hammer too highly.*"

Yes, contractors all over the country have good reason to rely on powerful McKiernan-Terry Hammers. For dependable, "even-flow" pile driving and extracting, investigate the wide-range McKiernan-Terry line. It includes 16 sizes of hammers and 2 sizes of extractors. Write for free bulletin.

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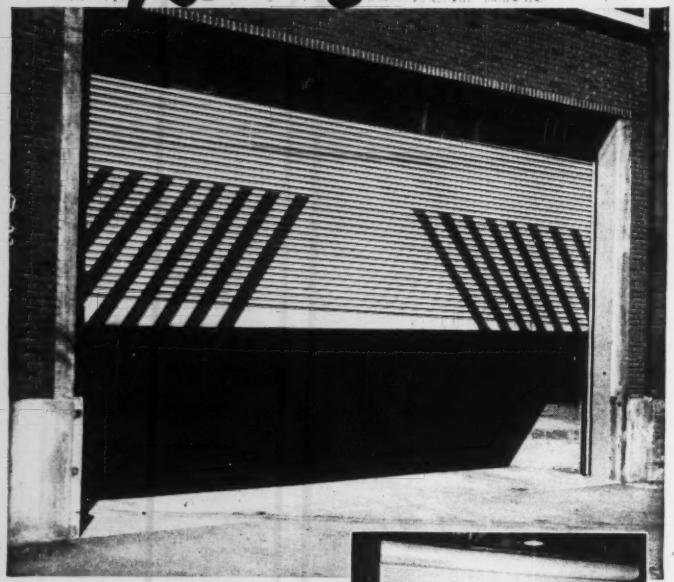

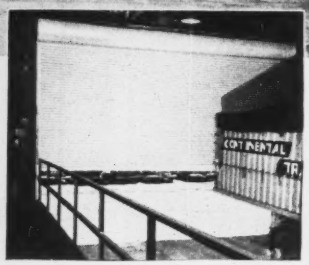

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EDWARD P. PALMER won Moles' member award.

Kiewit and Palmer win Moles' awards

Peter Kiewit and Edward P. Palmer have been named as winners of The Moles' awards for 1953. Given annually for "Outstanding Achievement in Construction," the awards go to one non-member and one member of the The Moles, a New York society of men engaged in construction of subways, tunnels, etc. The award is one of the highest recognitions of service to the construction industry.

Names of the winners were announced by A. Holmes Crimmins, chairman of The Moles Award Committee, at the association's dinner and Past President's Night in New York City on Nov. 5. The awards will be presented at The Moles 13th Annual Award Dinner at the Waldorf-Astoria Hotel, Feb. 4, 1953.

Peter Kiewit, winner of the Non-Member Award, is president of Peter Kiewit & Son's Co. and its various affiliates, with headquarters in Omaha, Neb. Edward P. Palmer, winner of the Member Award, is head of the New York City construction firm of Senior & Palmer Inc.

• **Kiewit**—In 1920, Kiewit started work as a bricklayer at the age of 20, working for the company his father had founded in Omaha in 1875. Only 10 years later he was president of the firm and, in the following 22 years, increased the company's net worth from about $500,000 to its present figure in the neighborhood of $17,000,000.

Probably the most notable Kiewit contract is for the Atomic Energy Commission's new $1.2-billion plant in Ohio, awarded this summer. It is estimated that average construction employment on that 4-year job will be 17,000 men, with a peak of 34,000. Other notable projects that the Kiewit

PETER KIEWIT, non-member winner of award.

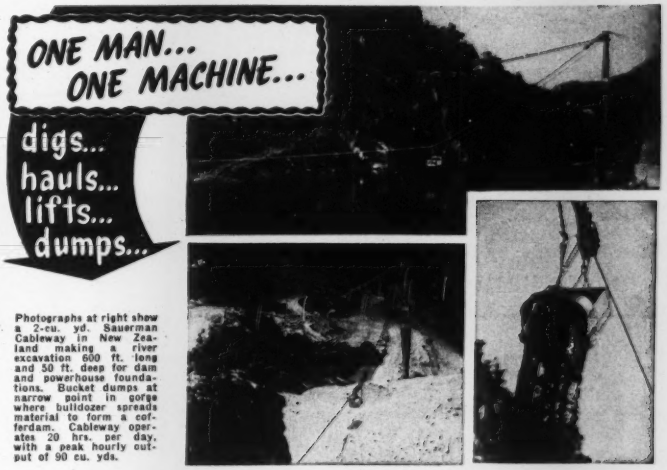
firm has tackled, sometimes as a joint venturer with other contractors, include: Project Bluejay, a huge Air Force base in northern Greenland; work on the New Jersey Turnpike; and such widely scattered dams as Bull Shoals (Arkansas), Hungry Horse (Montana), Garrison (North Dakota), Fort Gibson (Oklahoma), Philpott (Virginia), and Boysen (Wyoming). The company has done work in South America, Alaska, Guam and Hawaii.

• **Edward P. Palmer**—In the construction business for 46 years, Palmer has been connected with the building of the 7th and 8th Avenue subways in New York City, foundations for numerous bridges, including the George Washington span over the Hudson River, and is now co-contractor for substructure work on the New York Central R.R.'s new Harlem River crossing. The Senior & Palmer firm are experts in pneumatic caisson work.

Palmer has long been one of the most construction-industry-minded men in the contracting business, constantly seeking to better the conditions under which it has to operate. He was a member of the Contractors Code Authority in the days of the NRA; president of the Associated General Contractors of America; for 13 years a member, and for 6 years chairman, of the AGC's Labor Relations Committee; a member of an advisory committee on construction matters to the Munitions Board; for 6 years a director of the Chamber of Commerce of the United States; and an industry member on the National Joint Board for the Settlement of Jurisdictional Disputes in the Construction Industry.

A 1906 graduate of Swarthmore College, Palmer was a captain in the Army Transportation Corps in World War I, and is a member of the American Society of Civil Engineers.

("Men and Jobs" continued on p. 79)



Photographs at right show a 2-cu. yd. Sauerman Cableway in New Zealand making a river excavation 600 ft. long and 50 ft. deep for dam and powerhouse foundations. Bucket dumps at narrow point in gorge where bulldozer spreads material to form a cofferdam. Cableway operates 20 hrs. per day, with a peak hourly output of 90 cu. yds.

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Slackline Cableway Excavators

Long-reaching Sauerman Slackline Cableway Excavators stretch out across water, bog, sludge, or deep pits to pick up a load practically at finger-tip command. Only one man—sitting in a comfortable operating station overlooking the work site—is required to dig, haul, lift, and dump in a perfectly controlled non-stop cycle. Need for sending men and equipment to soft surface areas or hazardous locations is eliminated. A single machine, operated from a safe position, does the complete job quickly and efficiently.

From an economy standpoint, the one-man Sauerman Slackline Cableway is unsurpassed in its field of use. Labor and equipment costs are held to a bare minimum. Simplicity of design, plus the fact that only the most expendable parts come in contact with the material handled results in exceptionally low maintenance costs. Power consumption, gasoline, diesel, or electric, is moderate. All these facts add up to greater efficiency, speed, and economy.

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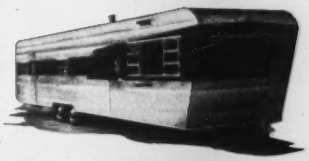

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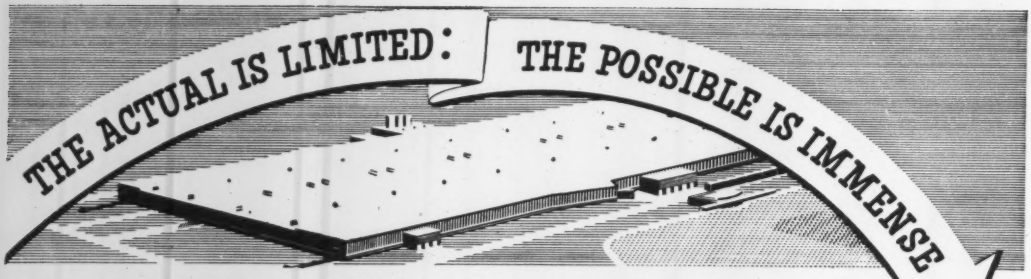

NEW LINCOLN PLANT CREATED BY INCENTIVE-INSPIRED CO-ACTION IN DEVELOPING POSSIBILITIES IN PRODUCT

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WELDED DESIGN SIMPLIFIES CONSTRUCTION ...SPEEDS FABRICATION, CUTS ERECTION TIME

SHOWN below are typical examples of how welded design cuts building costs. Continuous framing and elimination of splice plates save substantial tonnage of steel. Efficient shop fabrication is achieved with fast, downhand welding techniques. Simple beam-to-column details speed field welding with resulting cost savings of 15% to 20%.

Fig. 3. Simple details cut costs 23% *on factory building. 500 ton framework is set and welded by 5 man crew in 70 days. Fabricating and erecting costs are $150 per ton compared to $195 for riveting. Contractors, Repp & Mundt, Inc., Columbus, Ind.*

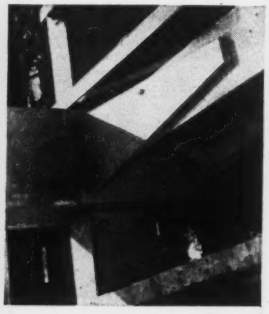
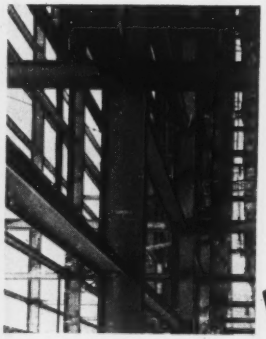


Fig. 4. Continuous girder *passes over column and is spliced at point of minimum stress. Typical detail is from multi-story 1700 ton framework that requires 15% less steel. Structural designing, Paul E. Jeffers and Robert Wilder, Los Angeles, California.*

Fig. 5. Beam to column connection *on 11 story apartment. 1200 ton framework erected with 25% less steel. Field welds are made in fast, downhand position to cut erection time. Engineers and Contractors, Byrne Organization, Inc., Washington, D. C.*



WELDED DESIGN ALWAYS SAVES STEEL AND LOWERS COST

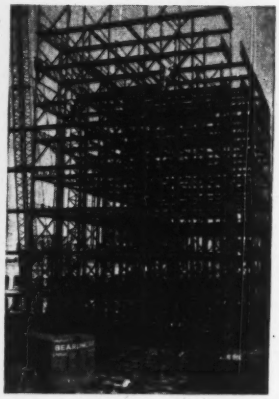


Fig. 1. Cuts steel 25% *on 13 story Ridpath Hotel, Spokane, Washington. Cost of all-welded design 900-ton framework is 20% less than riveting. Architect, Ned L. Abrams, Sunnyvale, California.*

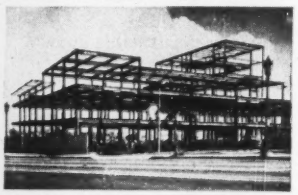


Fig. 2. Steel tonnage is 15% less *on four story department store for J. W. Robinson Department Stores, Los Angeles, California. 6" less height per story results from welded design. Architects, Pereira and Luckman and Charles O. Matcham.*

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JOHN J. JENKINS, JR., resident partner for J. F. Greiner Co., in Cleveland, co-ordinates and standardizes the work of 16 engineering firms.

Turnpike advisor co-ordinates 16 firms

Whether minor or major, most engineering problems arising during construction of the Ohio Turnpike will gravitate to John J. Jenkins, Jr., in Cleveland. In his capacity as resident partner for the J. F. Greiner Co., turnpike consultants, Jenkins will act as trouble-shooter.

Jenkins is currently co-ordinating the work of 16 engineering firms working on the project.

"As consulting engineer to the Ohio Turnpike Commission, our job is to standardize the work of other firms," Jenkins explains. "This is done with prepared design criteria, standard drawings and prepared specifications for construction and material."

• **Working day**—How do you build a $326-million turnpike? The answer to this question is simply: work, work and more work.

On a typical morning last month Jenkins put in a lot of time with engineers about a bridge over the Cuyahoga Valley in Summit County, there was a telephone conference with Columbus, the state capital, and a talk with the home office in Baltimore; a discussion of right-of-way problems; work on the monthly report to Columbus; a drainage problem on farms in the western part of the state where farmers have drain tile that has to be kept in service, and a little time talking about specifications in the office. After taking time out for lunch, it's back to work.

Right now Jenkins doesn't have to go out much into the field, but there are frequent trips to Columbus. "I expect I will be getting down there every week now," he says. When the field trips start he will travel by automobile to nearby places and by airplane to the more remote spots, where he will be called upon for advice as bridge, highway, architectural and structural engineer.

• **Greiner's job**—"Very obviously, the firms turning out plans have to be given guidance.

"Scheduling is important because of money. Interest on the $326-million bond issue is about $29,000 a day, if I recall the figure correctly—and it's paid out of the bond issue. If the project gets behind schedule, the charge eats into construction funds."

Bids for the first section of the roadway are expected to be taken in December.

Jenkins started working full time on the turnpike in Columbus. There the project started with a preliminary study of estimates, costs, and length of the facility. "All these were questions that had to be answered in the engineering report."

As of last month, Jenkins presided over about 35 engineers, plus office personnel in Cleveland.

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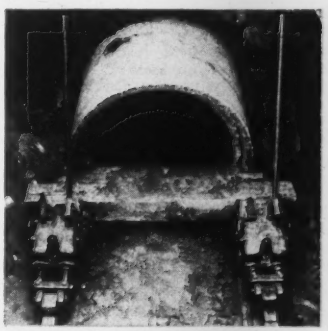

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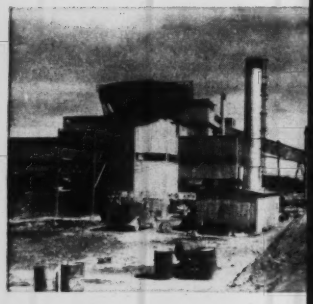

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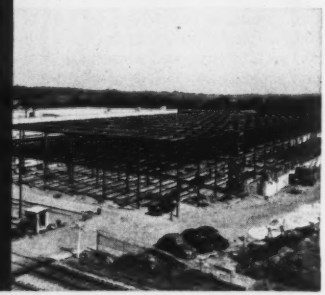

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MEN AND JOBS

All key men operating in Cleveland were transferred from the Baltimore office, and additional ones, some attracted by the magnitude of the job, have been employed.

All the Greiner Co. work on the turnpike is concentrated in the Cleveland office. E. J. Donnelly, another partner, who is the overall man-in-charge, gets to Cleveland frequently for consultation.

Jenkins, 41, was born in Baltimore and was graduated from Johns Hopkins University. He did two years' graduate work until 1935, at which time he went to Pittsburgh with the Wichert Continuous Bridge Corp. In 1936 he went to work for Greiner.

Henry Hill made consultant for Gunnison Homes, Inc.

Gunnison Homes, Inc., United States Steel Corp.'s housing subsidiary, announced this week that Henry Hill, noted architect, has joined the company as a consultant.

Hill said that he has always been interested in providing spacious, low-priced quality homes.

Hill received his architectural degrees from the universities of California, London and Harvard and he served on the faculty of Stanford University of many years.

He has had wide experience in residential and commercial architecture. Most of his work has been in the San Francisco Bay area.

Careers . . .

• **Appointed—Otto Steinbrenner** of Sacramento, Calif., a registered civil engineer, has been appointed city building inspector of Sacramento to succeed J. Ralph Shields, who retired. Steinbrenner moved to his new post from employment as a construction inspector in the structural design division of the California division of architecture. . . . **W. Leslie Webb** is new director of the FHA Tulsa, Okla., office. Webb succeeds **Oras A. Shaw** who resigned several months ago to return to private industry. . . . **Hans H. Bleich**, associate professor of civil engineering at Columbia University, has been promoted to the rank of professor of civil engineering. In addition to giving graduate courses in structural analysis and design, Professor Bleich is engaged in research in the fields of structures and applied mechanics.

Bernard J. Fallon will continue the general contracting business of Fallon, O'Donovan & Rassas, Chicago, under the name BJF Construction Co., Inc.

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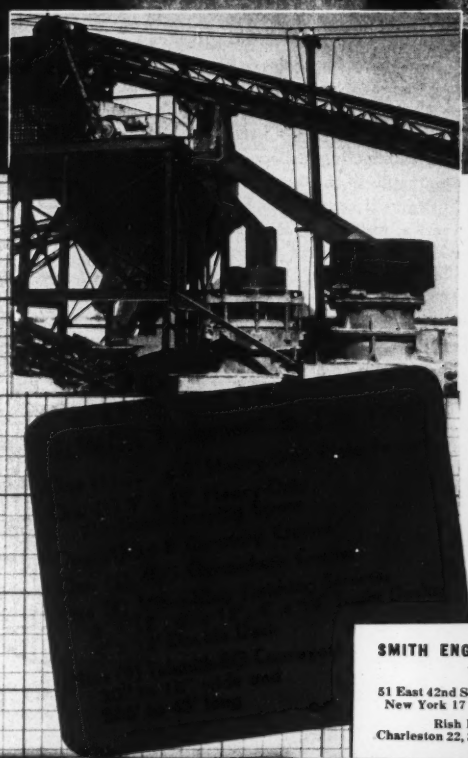

Barbers Corners Crushed Rock, Washed Sand and Gravel Plant of the Elmhurst-Chicago Stone Co., Elmhurst, Illinois. (Top) one of several Telsmith Vibro-King Screens; (left) Telsmith Scalping Screen, Gyratory and Gyrasphere Crushers.

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The Surveyor's Notebook

Reporting on Unusual Surveying Problems and Their Solutions

Notekeeper: W. & L. E. Gurley, America's Oldest Engineering Instrument Maker

A Report to Surveyors

It has been more than a year since the first in this series of "unusual surveying problems and their solutions" appeared in your engineering journals.

Massachusetts survey

The initial page in "The Surveyor's Notebook" showed how a Commonwealth of Massachusetts survey party used captive pilot balloons to get initial lines between stakes separated by heavy timber.

Since then, "The Surveyor's Notebook" has developed into a forum through which veteran field men voice their experiences in solving tough problems and eliminating common surveying hazards—for the benefit of other surveyors and engineers.

A Nebraska deputy county surveyor, for example, has relieved many a headache by explaining how he quickly determined a quarter-section line which was completely blocked by railroad cars. So did Stan Shartle of Danville, Indiana, with his account of leveling over 10 feet of corn.

Joe Thoma

One month, Joe Thoma, the prominent cadastral engineer, gave his remedy for "frozen" tripods; later told of the advantages of the solar transit.

These stories—and letters commenting on them—have come from all over the nation.

Niagara Falls' Corps of Engineers related how it made the first accurate survey of the Niagara River bed with the aid of unusual transit practices. The Chief Locating Engineer of North Carolina has created a great deal of discussion with his plan for improving land survey records.

Through "The Surveyor's Notebook", Gordon Ainsworth told how to get an oil pipeline laid in record time by using a few tricks of the trade.

Gordon Ainsworth

Dick Merritt described the unusual problems of surveying in the Arctic, while Jim Caputo showed how aircraft plants use transits. (His story led to the development of a new Gurley instrument for the industry.)

A great many surveyors have written to us saying that the experiences they read about in "The Surveyor's Notebook" have helped them solve their own field problems. And a number of the engineering colleges have requested copies regularly as classroom aids.

Gurley will continue to be notekeeper for the series; welcomes your comments and suggestions—and, of course, your own experiences.

The first year's stories and surveying tips have been gathered together and reprinted in permanent form. Write for your free copy of "The Surveyor's Notebook" *collection.*

When writing for your bound copy of "The Surveyor's Notebook" stories, ask also for Bulletin 50. It gives full details on Gurley instruments.

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LEGAL

Liability for negligence of inexperienced contractor

The State of New York had employed an independent contractor to demolish a building located adjacent to a roadway in a state-owned park. The state was held liable in damages for the death of a passerby who was killed as a result of the falling of one of the walls of the building being demolished.

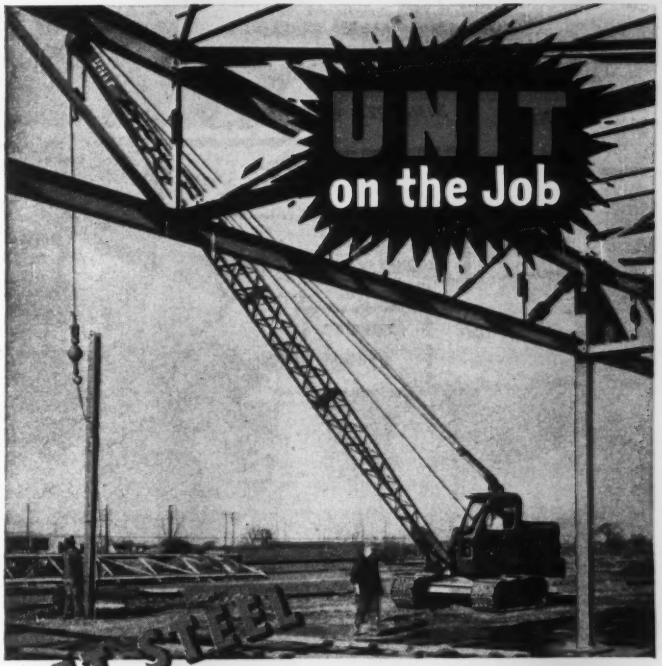
The contract for the demolishing of the building did not specify how the work was to be done except that it was to be performed in a manner satisfactory to the representative of the state in charge of the work. The contractor who had been employed to do the demolition work had had no experience in building or demolishing work. At no time while the work was in progress, did the contractor erect any barricades, warning signs or guard rails around the building, nor did he take any steps to support the outside walls of the building while the interior partitions, studding and flooring were being removed. An hour before the accident that killed the passerby took place, part of another wall of the building had fallen.

The liability of the state was predicated on the fact that it had failed to exercise reasonable care in the selection of a competent contractor and in that it had failed to see to it that proper precautions were taken to protect passersby from injury as a result of the demolition work being done. The court in its opinion pointed out that while as a general rule, the owner or employer is not responsible for the negligence of an independent contractor, there are a number of exceptions to the rule, all based on the concept that there are certain legal duties and responsibilities which cannot be avoided by delegating the work to another. Briefly summarized, these are:

(A) Where the work in question will probably result in damage to others unless preventive measures are taken. The demolition of a building along a street in a crowded city is an example.

(B) The law imposes a non-delegable duty on the person in possession of land or other fixed property to keep his premises in such state that people rightfully using it shall not be unduly exposed to danger. Employment of an independent contractor to do work likely to render the premises dangerous does not relieve the owner from his duty to see that due care is used

(Continued on page 85)



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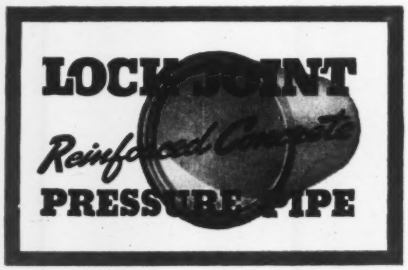

to protect such persons.

(C) The employer remains liable if he fails to use reasonable care to select a competent contractor, if it turns out that the contractor was in fact incompetent.[1]

(1) Janice v. State, 107 N.Y.S. 2d 674 (Court of Claims of New York, Oct. 18, 1951).

Rights of materialmen

In some states, like Indiana, local statutes provide for liens by materialmen for materials furnished for a building to the extent that they are used therein. In a recent case[1], the court in its opinion stated: "Even though a materialman relies primarily upon the credit of the contractor, he does not thereby waive, forfeit or estop his right to a lien when he furnished material for a building and the material is used in the building."

In the above case, the general contractor had failed to pay a materialman who, thereupon had filed a mechanic's lien against the building for the amount owing to him for materials furnished by him. The owner paid the materialman in order to remove the lien against the building and thereafter brought an action against the contractor for the amount paid the materialman and was allowed a recovery.

(1) Midland Bldg. Industries, Inc., v. Oldenkamp et al., 103 N.E. 2d 451, Appellate Court of Indiana, Feb. 2, 1952.

Written order for extras

In a summary of a legal decision relating to written orders for extras published in our issue of Sept. 4, the footnote that should have appeared at the bottom of page 232 giving the name of the case discussed was omitted. That footnote read as follows: Ostroff v Stephen Girard Inc., 85 a 2d 174 (Supreme Court of Rhode Island, Dec. 31, 1951).

Substantial performance

"* * * where a contractor substantially performs the work he contracts to do, even though it be defective or not finished, the only remedy available to the defendant is for reduction of the price to the extent of the damages sustained by reason of the defective performance of the contract which is the amount necessary to perfect or complete the work."[1]

(1) Poche v Landy, 57 So. 2d 808, Court of Appeal of Louisiana, March 31, 1952, and many cases there cited.

(These summaries of court decisions are prepared by I. Vernon Werbin, New York attorney and civil engineer.)

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5. Have record of proven trouble-free performance *on the job!*

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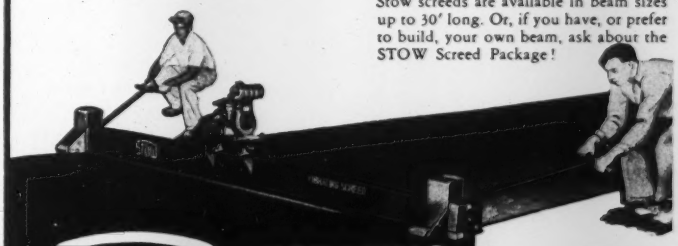

STOW VIBRATING SCREEDS

STOW MANUFACTURING CO.

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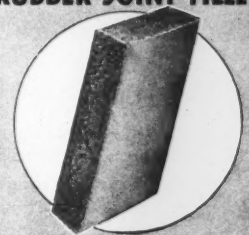
Write today for complete information on Stow Vibrating Screeds and the Stow Concrete Vibrator line. Request Bulletin 526.

Servicised Cementone Sponge RUBBER JOINT FILLER



- Matches Color of Concrete
- Fully Resilient . . . Non Extruding
- Made in Any Degree of Compressibility
- Supplied in Any Thickness, Length

Servicised Cementone Gray Sponge Rubber Expansion Joint meets the need for an inconspicuous joint filler for architectural concrete. Can be supplied in any degree of compressibility to meet your requirements.

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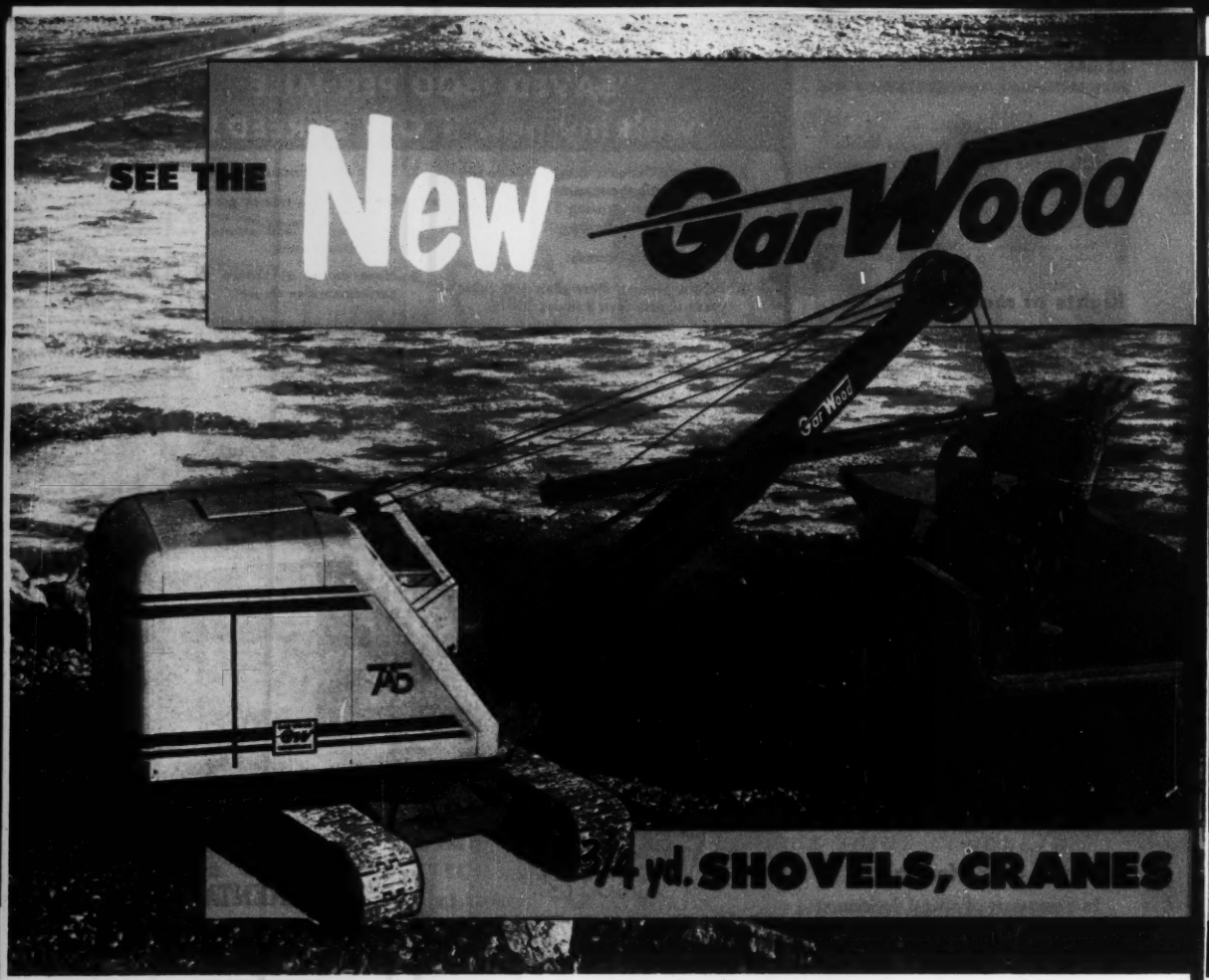
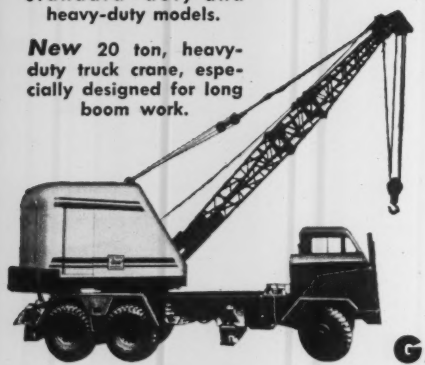


New ¾ yd. shovel, in standard-duty and heavy-duty models.

New 20 ton, heavy-duty truck crane, especially designed for long boom work.



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- **INSTANT MANUAL CONTROLS** give a positive, smooth "feel" of the machine. Operator maintains a steady working pace.
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- **FLUID COUPLINGS,** offered as optional equipment, reduces shock loads — gives ultimate in smooth lift crane operation.
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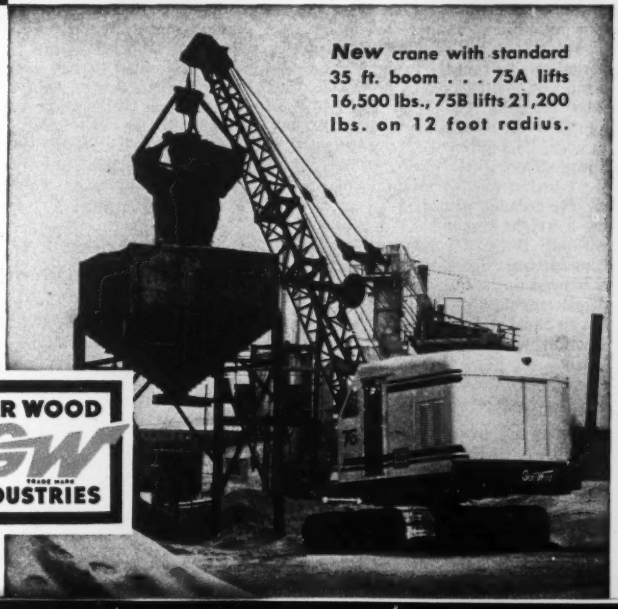
Gar Wood's 75 Series shovels are new to the civilian market although hundreds are in use by the armed forces . . . Three base machines are offered. The 75A, a standard duty ¾ yd. model; the 75B, heavy-duty ¾ yd. model and the 75BT, 20 ton truck crane.

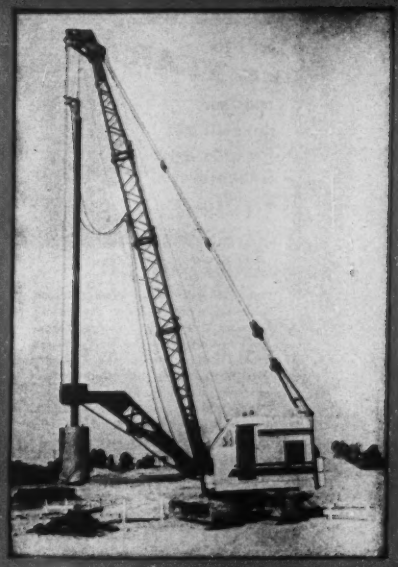
All models are easily convertible *in the field* for shovel, lift crane, clam, dragline, magnet, trench-hoe and pile driver work. *Only* Gar Wood offers the new Foundation Borer, an attachment that opens an entirely new source of profit to power excavator operators. A few Gar Wood features are listed below. Check your Gar Wood shovel distributor for full information.

and TRUCK CRANES



New crane with standard 35 ft. boom . . . 75A lifts 16,500 lbs., 75B lifts 21,200 lbs. on 12 foot radius.

GAR WOOD GW TRADE MARK INDUSTRIES



New FOUNDATION BORER

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New TRENCH HOE

¾ yd. dipper capacity with 3 other optional dippers. Digs to 17'10" depth with a cutting width of 39½".

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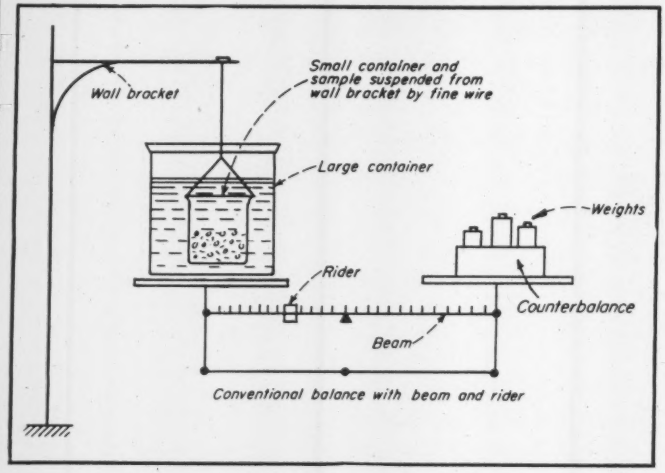


Conventional balance with beam and rider

Specific gravities determined faster

The laboratory setup shown here will prove a time-saver when a large number of routine specific gravity determinations of sand and gravel are required. The normal procedure is indicated by the formula: Specific gravity equals weight of sample in air (A) divided by A minus weight in water (E). But measurement of E is time-consuming and cumbersome.

It is obvious that $A-E$ is the weight of water which the sample displaces and thus represents its buoyancy. This tendency to float can be measured directly, as indicated in the drawing. First, balance a container of water (not full) with outside-supported smaller container submerged on a conventional balance with beam and rider attachments. Then place the sample in the smaller container and rebalance. The difference is the sample's buoyancy or $A-E$.

At first it may seem spectacular to see the balance disturbed by immersing a weight suspended entirely from without. But two well-known physical laws reconcile the illusion: the sample is buoyed up by the weight of its own displacement, and since every action has an equal and opposite reaction, the reaction will exert a force on the balance.

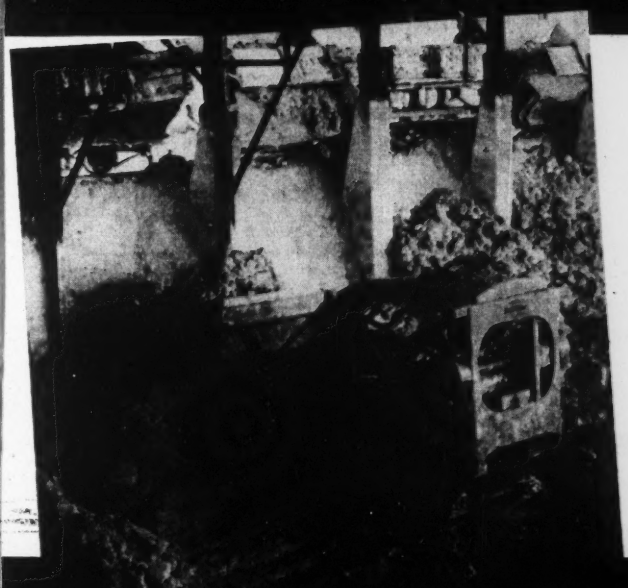
Paper industry searches for cheap evaporation

Research projects sponsored by the National Council for Stream Improvement, Inc., have been carried out cooperatively for the last six months at Virginia Polytechnic Institute and Louisiana State University. Object: more economical means of evaporating or concentrating spent liquor from the neutral sulphite process. It is the problem of disposing of semi-chemical pulping wastes which are a concomitant of paper manufacture.

Processes investigated were submerged combustion evaporation, vapor compression evaporation, and selective solvent concentration. Capital cost for submerged combustion evaporation was found much lower than that for conventional evaporators, but fuel requirements—limited to gas—were substantially higher. Vapor compression evaporation was found more efficient but higher in equipment cost. Selective solvent concentration using acetone was found expensive because of the acetone having to be separated by distillation for recycling.

Research authorized on structural steel items

The National Science Foundation has approved a grant of $9,000 to the Purdue Research Foundation, Lafayette, Ind., for one year for a research project on "The Relation of Residual Stresses to the Compression Strength of Structural Steel Columns." The principal scientist is J. E. Goldberg of the engineering experiment station at Purdue.



STOCK PILE LOADING

Loading clay with an Eimco 104 at a Southern clay operation has averaged 800 tons per shift for the better part of a year.

The clay material discharges easily and leaves the bucket clean.

This typical Eimco 104 loading job is repeated on many other types of material; rock, sand and gravel.

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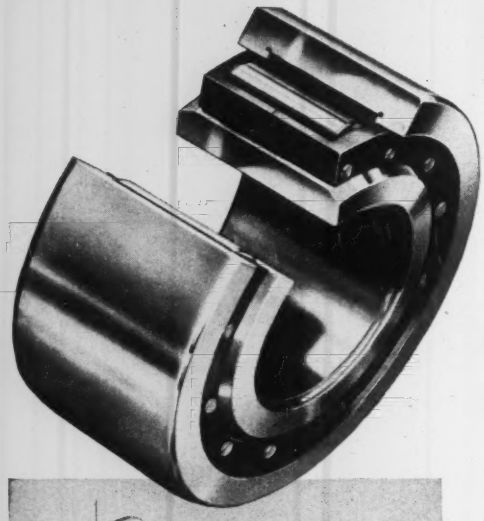
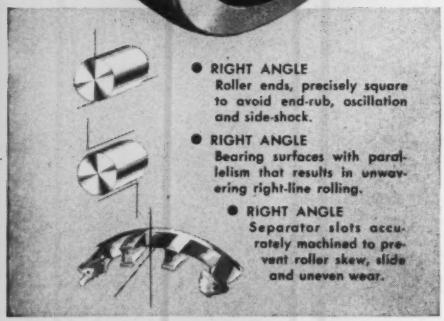
RIGHT ANGLE DESIGN

Reduces Maintenance Costs and Shut-Downs





- **RIGHT ANGLE** Roller ends, precisely square to avoid end-rub, oscillation and side-shock.
- **RIGHT ANGLE** Bearing surfaces with parallelism that results in unwavering right-line rolling.
- **RIGHT ANGLE** Separator slots accurately machined to prevent roller skew, slide and uneven wear.

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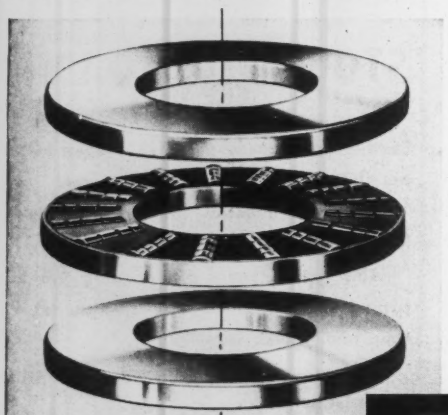

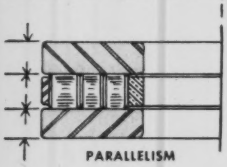

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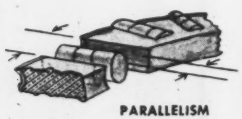
Rollway Bearing replacements are available through authorized bearing distributors in principal cities. Consult your classified 'phone directory.



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BOOK REVIEWS

Column stresses computed

BUCKLING STRENGTH OF METAL STRUCTURES—By Friedrich Bleich. 508 pp. St., New York 36. $10.00.

Building codes and other design specifications in general use give formulas for design of compression members, but they are applicable only to the simplest types of members and loadings. This book is intended to help engineers design more complicated structures.

Many methods developed for this purpose by various researchers have been published in different countries. To assemble the needed information in a single volume, the Bureau of Ships, through the David Taylor Model Basin, and Frankland and Lienhard, consulting engineers, New York City, sporsored a survey of the literature by the late Friedrich Bleich. The Column Research Council assisted in this work.

The author attempted to select the most useful methods. Alternative approaches were considered, but for most problems only one could be given; therefore, the book is not a complete treatise on the subject.

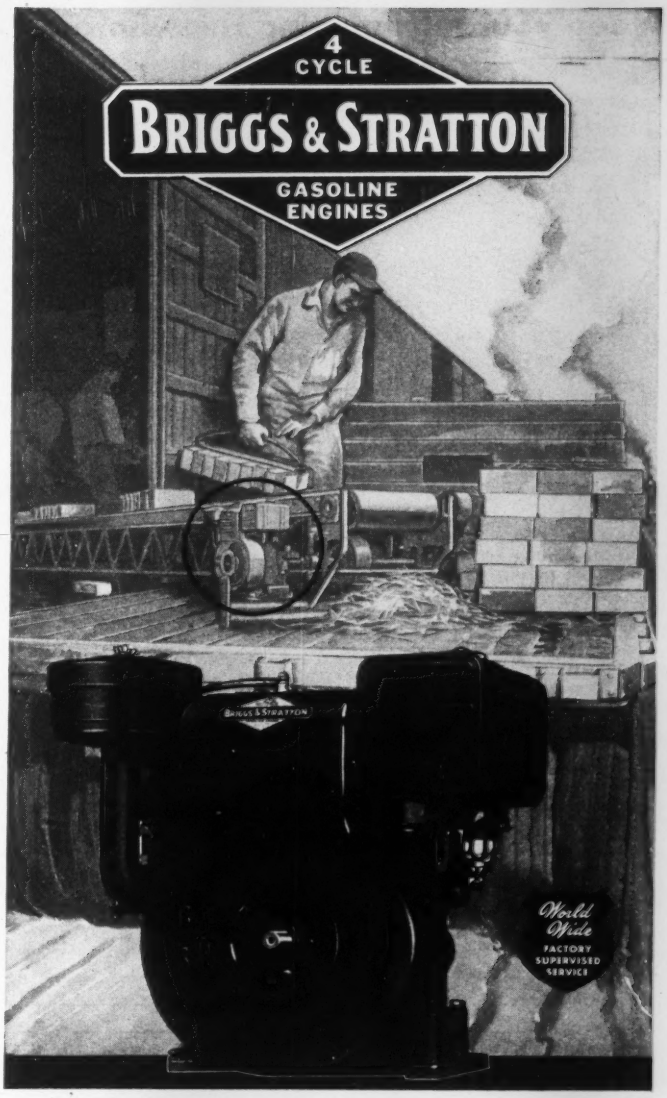
It does, however, cover a wide range of members and loadings in which structural engineers would be interested: buckling of centrally or eccentrically loaded columns, including the cases complicated with torsional and flexural loadings as well as axial compression; lateral buckling of beams; built-up columns; local buckling of plate elements of columns; effect of stiffeners; stability of girder webs; and special problems in the design of ship plating.

There is also a chapter on the determining of effective length of compression members in trusses and the stability of rigid frames.

Theories culled from the literature are simplified to make them more useful. Elastic buckling fromulas are generalized to apply also in the inelastic range. And numerous tables or approximate formulas are provided for using the results of complicated analyses. They represent much original work by the author.

The book is not well organized, however, for reference use. Finding the solution to a specific problem might entail close study of several pages of a pertinent chapter. Consequently, there still is need for a book summarizing the solutions in Bleich's volume and showing how to apply them.

(*New Books continued on page 92*)



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WHEREVER you find gasoline powered equipment doing the job better, faster — invariably the power is Briggs & Stratton. These single-cylinder, 4-cycle, air-cooled gasoline engines are leaders in the field and preferred for dependable power the world over. Briggs & Stratton Corporation, Milwaukee 1, Wisconsin, U. S. A.

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BOOK REVIEWS

Miscellaneous Notes on Booklets and Reports

• **Issuance of construction aid pamphlets** has been started by the Division of Housing Research of the Housing and Home Finance Agency, Washington, D. C. The purpose of these pamphlets is to help conserve critical building materials and to reduce building costs. Those issued to date are: Construction Aid 1, Plumbing Fixture Arrangement (15¢); Construction Aid 2, Roof Gutters (10¢); Construction Aid 3, House and Site United (15¢). Copies can be obtained from the Superintendent of Documents, Washington 25, D. C. for the prices indicated.

• **Studies of canal linings** made in recent years by the Bureau of Reclamation have resulted in the publication of a 70-page booklet by the bureau entitled "Canal Linings and Methods of Reducing Costs." Details of the various types of low-cost linings laid as part of this research program are given in this pamphlet, which can be purchased from the Superintendent of Documents, Washington 25, D. C., or the Chief Engineer, Bureau of Reclamation, Denver Federal Center, Denver, Col., for 25¢.

• **Plane coordinate projection tables** recently issued by the Coast and Geodetic Survey are: North Carolina (Special Publication 272); South Carolina (273); Massachusetts (274); West Virginia (275); Colorado (276); and Utah (277). Copies can be obtained from the Superintendent of Documents, Washington 25, D. C. The price of Nos. 272, 273, 274 and 275 is 15¢, and the other two are 20¢.

New Engineering Books

THE MUNICIPAL YEARBOOK, 1952—604 pp. International City Managers' Association, 1313 East 60th St., Chicago, Ill.

CHARTING STATISTICS—By Mary Eleanor Spear. 253 pp. McGraw-Hill Book Co., 330 W. 42nd St., New York 36, N. Y. $4.50.

TECHNICAL REPORTING—By Joseph N. Ulman, Jr. 289 pp. Henry Holt and Co., 383 Madison Ave., New York 17, N. Y. $3.50.

HEALTH RESOURCES IN THE UNITED STATES—Survey by the Brookings Intitution, Washington 6, D. C. 344 pp. $5.00.

DICTIONARY OF ARCHITECTURE—By Henry H. Saylor. 221 pp. John Wiley & Sons, 440 Fourth Ave., New York 16, N. Y. $4.50.

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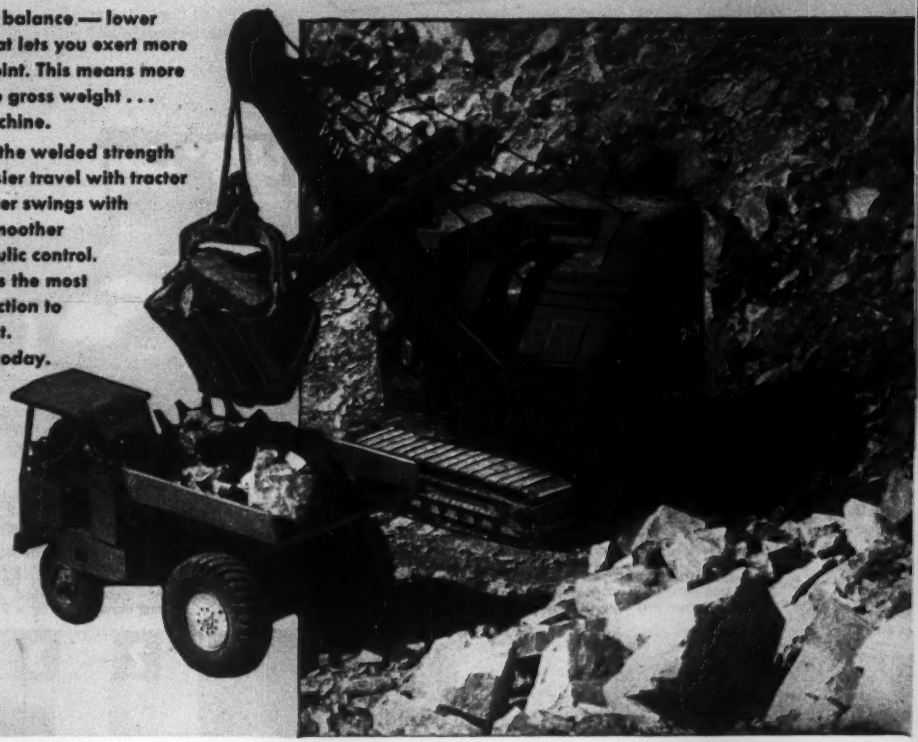

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Big

ESTABLISHING MOUNTAIN-TOP BASE, a helicopter and a TD-24 put men, machinery and supplies on mile-high pass as first step in efforts to build road down to meet section coming up from each side. TD-24 pulled yarder, winch, and compressor into pass after bitter 7-day fight.

1 **RAISING KENNEY DAM** to fill the Grand Canyon of the Nechako River, workers sluice down some of the 3.8 million cubic yards of earth and rock it will eventually contain. Dam will form a reservoir with twice the capacity of Grand Coulee. TD-24 in foreground strips blasted rock from canyon wall abutment.

2 **HEADING OPERATIONS** at Kenney Dam are (left to right) Alcan Resident Engineer Harry Jomini; General Superintendent "Hak" Nielsen and Project Manager Jack Bremner, both of Mannix, Ltd., sub-contractor for Morrison-Knudsen Company of Canada, Ltd. 110 miles west, dammed-up waters will be diverted through mountains and dropped a half mile to run turbines in sea-level powerhouse.

3 **DRIVING TEN-MILE TUNNEL** through mountain is done from four headings. Here, half a mile above ocean-level valley, aerial tramway has delivered TD-24 to tunnel portal for working debris down mountain. 2,600 feet below, eight-story powerhouse inside mountain is being mucked out by a TD-24 and a TD-9.

Red TD 24 Pioneers New Frontier

59 International TD-24s spearhead largest integrated engineering program in history for Alcan (Aluminum Company of Canada, Ltd.) on Project British Columbia

A fleet of 59 hard-hitting International TD-24s is blazing a new frontier across 5,000 square miles of wilderness in British Columbia.

Twenty-four hours a day, they're on the go for Morrison-Knudsen Company of Canada, Ltd., prime contractor for most of the giant development that includes:

Building the largest sloping clay core dam in the world

Driving a subway-size tunnel ten miles through a mountain

Blasting out an eight-story powerhouse two blocks long inside solid rock

Erecting a transmission line fifty miles long over a jagged mountain range

Raising the world's largest aluminum smelter and a new port city at Kitimat where 50,000 people may eventually live and work.

A. O. Strandberg, project manager for Morrison-Knudsen, says:

"These TD-24s are doing the impossible. We never thought any tractor could go where these tractors are working now. They have the weight, they have the balance, and they have the power to get the job done."

And here's what superintendents on the firing line say:

Bill Richards: *"They're pushing boulders uphill we had to dynamite in the old days."*

Herb Wilkinson: *"I wouldn't believe where they'd go until I got them on my crew."*

John Hutton: *"They're doin' work up here they were never built for but they're doin' it just the same."*

Your International Industrial Distributor can give you the facts and figures on the TD-24. See him. You'll be a TD-24 man from then on in!

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POWER THAT PAYS

4 **INSPECTING MOUNTAIN TOP OPERATIONS** at Kemano, headquarters for construction of powerhouse, tunnels and transmission line are (left to right) A. O. Strandberg, Project Manager for Morrison-Knudsen; F. T. Matthias, Alcan Assistant Project Manager, and Walter Abrahamson, Alcan Assistant Resident Engineer at Kemano.

5 **LINKING UP POWER TRANSMISSION LINE ROAD,** a pair of TD-24s doze toward each other through blasted rock. Across 50 miles of rugged terrain like this, a mountain-anchored powerline will be built to flash abundant electricity from mountain powerhouse to smelter at tidewater.

6 **NEW LAND IS MADE IN OCEAN INLET** by dredge which deepens anchorage for ocean shipping at the same time. H. M. Whiting (right), Project Manager for Kitimat Constructors, Ltd., and a superintendent study progress. Part of this 70 acres of new land will become site of new aluminum smelter. Town which may eventually become city of 50,000 will be built across the bay.

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Apartments

Sales and service building using 40′ trussed rafters furnished by Roof Structures, Inc., Webster Groves, Mo.

Early in 1946 our Engineering Department was called upon to submit suggestions for 24-foot-span trussed rafters for a large project of veterans' homes. The builder intended using low-cost non-bearing interior walls and so required a roof and ceiling framing system supported solely by the exterior walls.

The triangular truss developed was a combination of 2 x 4's and 2 x 6's put together with 2½" diameter Teco split rings in overlapping joints. The trusses were placed 24 inches on centers to make the most of the inherent strength of the wood. This permitted the use of regular one-inch roof sheathing and available ceiling materials.

Since then, over 65,000 housing units have been built with Teco trussed rafters.

These economical rafters are also profitable used for commercial, industrial, church and school buildings.

Fabricators in all sections of the country are ready to serve you.

Specify timber—there's plenty of it for early delivery.

TIMBER ENGINEERING COMPANY, 1319 18th St., N.W., Washington 6, D. C.

Please send me FREE copy of "Wood Frame Teco Trussed Rafters."

We plan to build a _____

NAME _____

COMPANY _____

STREET _____ CITY _____ STATE _____

ENR

OBITUARIES

Chapin E. Harris, 70, formerly city engineer of Norwich, Conn., who worked on the construction of the Pennsylvania Railroad tunnels at New York City and later on a valuation survey of the New Haven Railroad, died at Boston Oct. 19. He was a graduate of the Chicago College of Engineering, and of late was connected with the Avery & Saul Co., Cambridge, Mass.

Warren R. Borst, 81, formerly a civil engineer with the N. Y. City sanitation department, died at Rome, N. Y., Oct. 16. He was a 1895 C.E. graduate of Union College.

Harry Redwood, 69, New York tunnel construction man, died in Astoria N. Y. recently. He came to the United States in 1904 to work with the English firm of S. Pearson and Son on construction of the Pennsylvania Railroad's East River Tunnel. In the late '30's he was general superintendent for Walsh Construction Co. on the Queens-Midtown Tunnel.

Richard Carl Gnaedinger, 24, a member of the engineering staff of Soils Testing Services, Inc., Chicago, was fatally injured in an auto accident near Oregon, Mo., Oct. 17. He attended Cornell University and was graduated from Northwestern University this year with a B.S. of C.E. degree, and was in charge of student activities at the recent Centennial of Engineering in Chicago.

Charles B. Cuninghame, 51, former engineer with the Ohio highway department, died Oct. 19 at Granville, Ohio. He was vice-president and manager of Cuninghame & Wise, Inc., road contractors.

S. T. Richardson, 70, civil engineer and surveyor, died at Vicksburg, Miss., Oct. 18. A graduate of the University of Tennessee, he became an expert tracer of old property lines along the Mississippi River. One of his outstanding jobs was the survey of Island 40.

Eric C. Norton, 47, a civil engineer in the N. Y. State Department of Public Works, died Oct. 21 as a result of a fall from the 10th floor of the State Office Building at Albany. A graduate of R.P.I., Mr. Norton had been in the department since 1927, and latterly had been principal civil engineer in the highway planning bureau.

MATERIALS AND LABOR PRICES

Market quotations on construction materials and wage rates reported monthly by ENR correspondents
December Materials, and Labor Prices will appear in December 4, 1952 issue

CEMENT, AGGREGATE, READY-MIXED CONCRETE—F. O. B. CITY

	PORTLAND CEMENT* Per bbl. C/L lots cash. dis. not deducted			SAND AND GRAVEL Per ton, carload lots			CRUSHED STONE Per ton, carload lots		CRUSHED SLAG Per ton, carload lots, f.o.b. plant		CONCRETE BLOCK 8 x 8 x 16-in.; truckload del.; per block		CONCRETE Ready Mixed 1:2:4, over, 50 c.y., del.
	Paper	Bulk	Mortar	Gravel, 1½ in.	Gravel, ¾ in.	Sand	1½ in.	¾ in.	1½ in.	¾ in.	Sand	grav.	Lt. wgt. agg.
Atlanta	$3.81	$3.50	3.30	$2.00	$2.00	$1.75	$2.10	$2.10	$1.65	$1.85	$0.19	$0.19	$11.90
Baltimore	3.76	3.45	3.38	2.50‡a	2.50‡a	2.00‡a	2.70‡a	2.80‡a	2.60‡a	2.55‡a	.17	.17a	10.80
Birmingham	3.11	2.81	....	2.24n	2.24n	1.94n	2.50	2.50	1.10	1.30	.165	.165	9.75
Boston	4.01	3.69	3.81	2.50a	2.50a	2.50a	1.50a	1.60a	....	....	.20	.22a	11.50k
Chicago	3.33	3.02	....	3.00‡b	3.00‡b	3.40‡b	3.00‡b	3.00‡b	2.00‡	2.00‡	.22	.22b	11.44/11.94
Cincinnati	3.61	3.40	3.40	2.09‡c	2.14‡c	2.14‡c	2.44‡e	2.44‡e	....	....	.21	.225a	10.95
Cleveland	N. A. in C. L.		....	2.05af	1.85f	1.65	3.81a	3.81a	2.95‡	2.95‡	....	.23	12.40d
Dallas	2.95	2.65	2.70	2.18	2.28	1.84	2.22	2.38	....	....	.125e	.215	9.30
Denver	3.89	3.59	3.89	1.85	2.00	1.20	....	....	....	....	.22	.255a	10.50
Detroit	3.27	3.00	3.05	4.25‡b	4.25‡b	3.75‡b	4.25‡	4.25‡	4.25‡	4.25‡	.19	.20a	10.75f
Kansas City	3.30	3.03	3.15	1.85‡	1.85‡	1.50‡a	2.00‡a	2.00‡a	....	....	.18ag	.23e	11.35b
Los Angeles	4.00a	3.60a	4.72	1.95a	2.20a	1.95a	1.95a	2.08a	....	....	.11‡m	.22m	10.43ah
Minneapolis	3.80d	3.49d	3.41	2.30‡ag	2.30‡ag	1.35‡ag	2.50‡ag	2.50‡ag	....	....	.21ak	....	12.15fk
Montreal	3.01ae	2.86ae	....	2.50	2.50	2.25	1.05ij	1.30ij	....	....	.20	.20a	9.65ah
New Orleans	3.20	3.02	3.18	2.32	2.32	1.82	....	....	1.05	1.25	.25	....	12.90
New York	3.86	3.55	3.43	2.35bk	2.35bk	1.60bk	2.50bl	2.50bl	....	....	....	....	11.80an
Philadelphia	3.43/3.82‡	3.12/3.49‡	3.43/3.48‡	2.75‡	2.75‡	2.15‡	2.10‡	2.15‡	1.75	1.65	.22/.25	....	11.80
Pittsburgh	3.32	3.04	3.32	2.15‡	2.15‡	2.10‡	2.60‡	2.60‡	2.15	2.15	.23d	.22d	12.50
St. Louis	3.27/3.48b	2.84/3.10b	3.05/3.22	2.90am	2.90am	2.30/2.70am	1.70j	1.70j	1.50	1.50	.215	.215ex	10.40
San Francisco	3.36	2.96	....	1.92	1.92	2.02	2.02	2.02	....	....	....	.23el	10.70e
Seattle	3.75a	3.25a	4.50a	3.00‡bm	3.00‡bm	3.00‡bm	3.50‡bm	3.50‡bm	....	....	.24j	.3325j	11.40f

*Delivered. * Prices incl. dealers comm. except as noted.
CEMENT: a Subj. to 10¢ dis. b Less 2% for cash. c CL price dealers comm. not incl. d Dealers sell only LCL. k LCL.
SAND, GRAVEL, STONE & SLAG: a Truck lots. b Per cu. yd. c 5 tons or more. e ¾". f Pea gravel. g Less 5% for cash. h Less than 5 tons. i Sales tax incl. j F.o.b. quarry. k Barge lots asd. l F.o.b. scow Hudson river. m Less 2% for cash. n F.o.b. cars.
CONCRETE BLOCK: a Cinder. b Waylite. c Haydite. d Celocrete. e 5½ x 8 x 12 in. f 8 x 4 x 16. g F.o.b. truck at job. i Less 2% for cash. j Less 1% for cash. k 8x8x18. l F.o.b. plant San Rafael. m F.o.b. yard.
READY MIXED CONCRETE: a 5 cu. yds. or over del. Man. b 25 cu. yds. or more. c 10–100 cu. buckets. d 1–3 mi. zone. e 2,000 lb concr. f 2500 lb. comp. h Less 50¢ for cash. i 5% off for cash. j 2% off for cash. k Sales tax included. l 1:2½:4. m F.o.b. yard. n Plus escalator clause.

CASH DISCOUNTS CEMENT to Contractors: Truck delivery, 2% for cash on 10th of month; on carload deliveries, no trucking, same as dealer cash discount 10c. per bbl. for payment within 15 days of date of invoice. Subject discount 10c. per bbl. 20 days in Montreal.

CURRENT MAXIMUM PRICES AT CEMENT MILLS

Charge for bags not included. For paper bags add 30¢ per bbl., not refundable

	Bulk		Bulk		Bulk		Bulk
Richard City, Tenn.	$2.60†	Buffington, Ind.	$2.55†	Steelton, Minn.	$2.65†	Muskegon, Mich.	$2.70†	Toledo, O.	$2.60†
Clinchfield, Ga.	2.60†	Independence, Kan.	2.50†	Leeds, Ala.	2.45†	Saginaw, Mich.	2.60†	Milwaukee, Wis.	2.75†
Kingsport, Tenn.	2.60†	Hannibal, Mo.	2.55†	Duluth, Minn.	2.65†	Wyandotte, Mich.	2.60†	Green Bay, Wis.	2.75†
West Des Moines, Iowa.	2.65†	Northampton, Pa.	2.60†	Hudson, N. Y.	2.60†	Buffalo, N. Y.	2.60†	Ironton, O.	2.60†
Nazareth, Pa.	2.60†	Universal, Pa.	2.65†	Alpena, Mich.	2.50†	Oswego, N. Y.	2.75†	Montreal City	2.61
Bath, Pa.	2.60†	Waco, Tex. (+ 10¢ tax)	2.50†	Detroit, Mich.	2.60†	Cleveland, O.	2.60†	W. Winfield, Pa.	2.65†

† *Prices to hold for fourth quarter of* 1952.

PAVING BRICK, BLOCK, ASPHALT, ROAD OILS—F. O. B. CITY

	PAVING BRICK AND BLOCK			PAVING ASPHALT Per ton, less than 80 penetration		ASPHALT BINDERS—FLUXES Per gal., 80-300 penetration		CUTBACK ASPHALT Per ton		ROAD OIL Per gal.	ASPHALT EMULSION (Quick-breaking) Per gal.	
	Granite Per M lots of 50,000 4x4x8 in.	Brick per M 3x4x8½ in. carload lots	Wood per sq. yd. 3½ in. 16-lb. treat	Tank car	Drums	Tank car	Drums	Tank car	Drums	Tank car	Tank car	Drums
Atlanta	$73.00	$35.00	$2.25	$26.00	$33.25	$0.1975	$0.339	$0.095w	$0.185w	$0.105	$0.115	$0.225
Baltimore	150.00‡	58.00‡	.....	22.00	.....	.0809	0.15	.09w	.17w	.09k	.09	0.12
Birmingham	.....	45.50i	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Boston	.....	.....	.....	24.50a	35.50a	22.00ax	35.50ax	.....	.....	.09a	.105a	.22a
Chicago	155.00‡	90.00‡b	4.40/4.60‡f	20.25b	30.25b	19.25bv	29.25bv	.0875bw	.165w	.075b	.....	.....
Cincinnati	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Cleveland	200.00	55.00d	4.27g	23.00[4]	.....	23.00[4]	.....	.1025[4]w	.194w	.....	.1115[4]	.194
Dallas	e	40.00	e	24.05	43.09	.1016	.2103	27.09	47.87	.0980	.1041	.2128
Denver	.....	48.00	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Detroit	.....	92.00	.. ..	26.82	.....	26.82x	.....	.117w	.....	.0925	.....	.2811r
Kansas City	e	e	r	16.50el	...	.055	.....	.07tw	.....	.0585e	0.435	.....
Los Angeles	e	.....	e	15.50dmz	....	15.50dxz	....	17.00dz	.....	16.00dv	.0825j	.1325j
Minneapolis	.....	.....	2.88h	23.90	.....	22.895	.....	.0894w	.....	.0794	.0935	.....
Montreal	.....	e	e	27.10n	36.65n	.135n	.183n	16.30nu	18.80nu	.132n	.184ns	.225ns
New Orleans	.....	.....	.....	17.50e	....o	17.50es	.....o	.085ew	.....o	.085p	.085	.....
New York	.....	.....	3.12f	26.26q	47.59q	25.26st	46.58st	.1071w	.2021w	.1071	.1072	.1992f
Philadelphia	175.00	110.00	4.06	22.00	....	.....	.....	.095u	.....	.....	.....	.....f
Pittsburgh	165.00	48.00	4.60	23.00	37.00	.10	.20	27.00	39.00	.095	.09	.205
St. Louis	.....	.....	.....	18.68f	....	.1698	.....	.0865 / .080n	.....	0.15	.0975	.....
San Francisco	.....	55.00e	.....	17.00q	32.50qp	17.00qkv	22.50qkv	19.00q	36.50q	17.50w	.085y	.....
Seattle	.....	.....	.....	17.00ah	37.50ah	16.25ahv	.....	19.50ah	...	18.50av	.095h	.105hr

‡ Delivered.
PAVING BRICK & BLOCK: a CL. b 3½ x 4 x 8½. c 2½ x 8½ x 4. d LCL, truck deliveries. e Not used. f 2" interior 6¢ treat. g 3". h 8¢ treat. i 3 x 3½ x 8½.
ASPHALTS: a Price at plant, Everett, Mass. b F.o.b. refinery, Lockport, Ill. c F.o.b. Sugar Creek, Mo. d F.o.b. refinery, El Segunda. e F.o.b. Baton Rouge. f F.o.b. Wood River or Roxana, Ill. g F.o.b. Richmond, Calif. h F.o.b. Martines. i F.o.b. refinery, Baltimore. j F.o.b. refinery, Inglewood, Calif. k 50–110 penetr. l Less than 100 penetr. m 40–80 penetr. n Tax incl. o Drums not avail. p Shipped in steel bbl. q 40–85 penetr. r In customer's drums. s Shipped in drums, per drum. t 85–300 penetr. u Per 100 gal. v Per ton. w Per gal. x Also tank trucks. y F.o.b. Oakland. z F.o.b. refinery, Cleveland. a' F.o.b. Norco, La.

IRON AND STEEL PRODUCTS—PER 100 LBS. BASE MILL PRICES

	STRUCT SHAPES—	PLATE CARBON STEEL	REINF BARS billet	RIVETS ½-in. structural	SHEET PILING	STEEL RAILS Per Net Ton Standard	Light	Re-rolled	TRACK SUPPLIES Angle Bars	Std Spikes	Tie Plates	Track Bolts
Birmingham Area	$3.85	$3.90	$3.95	$7.85	....	$75.50	$85.00	Not	$4.925	$6.65	$4.775	....
Chicago Area	3.85	3.90	3.95	7.85	$4.675	75.50	85.00	avail-	4.925	6.65	4.775	....
Pittsburgh Area	3.85	3.90	3.95	7.85	4.675	75.50	85.00	able	4.925	6.65	4.775	$9.85
Buffalo Area	3.85	3.90	3.95	7.75	4.675	75.50	85.00	....	4.925	6.65	4.775	9.85
Cleveland	....	....	3.95	7.85	4.675	.....	.....	....	....	6.65	....	9.85
Youngstown Area	....	....	3.95	....	....	.....	.....	....	....	....	....	....
Geneva	3.85	3.90	....	....	....	.....	.....	....	....	6.65	....	....
Los Angeles	....	....	....	....	....	.....	.....	....	....	....	....	....
Pueblo	3.85	3.90	3.95	....	....	75.50	85.00	....	4.925	6.65	4.775	9.85

IRON AND STEEL PRODUCTS—F. O. B. WAREHOUSE, PER 100 LBS., BASE PRICE

	STRUCTURAL SHAPES Per 100 lb. base price	REINFORCING BARS Per 100 lb., base price u 5 tons to carload lot b New billet	Rail steel	Add switch	$/cwt for Del.	EXPANDED METAL LATH k Per 100 sq. yd., carload lots Std. diamond mesh. 3.4 lb.	Std. ribbed 3.4 lb.	WELDED FABRIC REINFORCING d Per 100 sq. ft., carload lots 4x16 in., No. 5 & 10 wires	4x12 in., No. 8 & 12 wires	6x6 in., No. 6 & 6 wires
Atlanta	$7.31	$7.11	$7.11	$.025	$...	$36.00‡	$40.00‡			
Baltimore	6.47	6.07l	....	....	....	42.00	45.00			
Birmingham	5.95	5.80	5.80	.05	.15	47.00p	52.00p			
Boston	6.56a	6.38	6.38	....	....	39.50	43.50			
Chicago	5.95	5.35/5.45ff	5.35/5.45ff	.0625	....	46.00C	51.00C			
Cincinnati	6.42ak	6.13r	....	....	.15	38.50zee	41.00zee			
Cleveland	6.30	5.06p	....	....	....	37.50‡	41.00‡			
Dallas	9.05	7.25	7.25	....	....	49.00	52.00			
Denver	7.55	7.50e	....	....	....	50.00s	62.00qs			
Detroit	6.42	6.24n	....	....	.20	53.00	58.00			
Kansas City	6.70mn	6.97	....	....	....	35.50	39.00			
Los Angeles	6.80/kk	6.82g	....	....	....	48.00	54.00kk			
Minneapolis	6.51kk	7.12ll	7.12ll	....	....	36.00	39.50			
Montreal	6.65iB/6.95A	4.90i	4.90g	....	....	51.00k	57.00k			
New Orleans	....	5.80ok	....	.05	....	66.00	66.00			
New York	6.77	6.50	6.50	....	.30	38.50at	42.50at			
Philadelphia	6.42	6.67	....	....	....	38.00‡	42.00‡			
Pittsburgh	5.80/6.00	5.80/6.00	....	....	.10	36.60	38.60			
St. Louis	6.35q	5.75e	5.75e	....	....	47.00aa	53.00aa			
San Francisco	7.12	6.50l	....	....	....	40.50	43.50			
Seattle	4.50s	5.80el	....	....	....	57.00mmm	47.00mmmz			

A.P.M.* Joliet, Illinois, Donora, Penn., $2.81 F.o.b. Mill: Monessen, Penn., $2.91

A.P.M.* Joliet, Illinois, Donora, Penn. $1.95 F.o.b. Mill: Monessen, Penn., $2.03

A.P.M.* Joliet, Illinois, Donora, Penn., $2.05 F.o.b. Mill: Monessen, Penn., $3.05

* At Producing Mill

‡ Delivered. b 1–5 tons, add 35¢. Less than 1 ton, add 50¢. c 20 tons or over base. d Mill price plus freight. e F.o.b. plant. f Includes delivered in free delivery zone. g 10,000 to 39,999 lbs. h List price. Dominion tax exempt. Provincial and Municipal tax extra. i Plus Dominion, Provincial any Municipal sales tax. j Price per ton. k F.o.b. city. l Intermediate and hard grade, new billet. m Per sq.yd. n 5–10 tons. o 5 to 20 tons base. p Del. of 500 sq. yd. or more. q Std. ribbed, 4 lb. per sq. yd. r 5 tons or over. s LCL. t Asphalt coated. u Note: Revised size extra — 1 in., 1¼ in., 1½ in., 10¢, ¾ in., ⅞ in., 15¢, ⅝ in., 25¢, ¾ in., 50¢, ⅞ in. 80¢. 1 in. $1.90. v 20 tons. Straight. w Copper bearing. x 2.5 lb. per sq. yd. y $0.0093 transportation tax included. z Copper alloy. aa Delivered truck to job. Contractor to do unloading. dd F.o.b. dock. ee F.o.b. cars. ff Carload lots. gg Including sales. hh 10,000–19,999 lbs. kk 1" ribbed. ll 5 to 8 tons, f.o.b. city. mm 2% off for cash. nn 1–5 tons. ‡ 10 tons to CL. a 2000–9999 lbs. A. Amer. struct'l shapes. B. Canadian shapes. C. Deliv to contractor.

PLUMBING, HEATING, WATER, SEWER AND DRAIN PIPE

	C. I. PIPE Per net ton f.o.b. 6 in. to 24 in.a	ASBESTOS CEMENT PIPE per lin. ft., f.o.b. city 6" Pr Cl. 150	12" Sew Cl. I	VITRIFIED SEWER PIPE Per foot, Delivered ASTM C13–44T std. 8 in. s.s.	std. 12 in. s.s.	24 in. ds.	36 in. ds.	CLAY DRAIN TILE ASTM C4–24 Per 1,000 ft., carload lots, f.o.b. 6 in.	8 in.	CONCRETE SEWER PIPE Per ft., delivered; ASTMC 14–41 12 in.	24 in.
Atlanta	$101.00	$1.44	$2.42	....	....	....	....	....	....	....	....
Baltimore	109.00	1.46	2.42	.546	1.053	4.275A	11.3775A	178.20	274.80	.90	2.45
Birmingham	93.00	1.44	2.42	.42	.75	2.99	....	250.00‡	375.00‡	1.25m	2.75m
Boston	113.00	1.46	2.20	.553uvx	1.0665uvy	4.41uvy	11.90uvy	187.80z	289.20z	1.55mg	3.80mg
Chicago	107.00	1.44	2.20	.70m	1.35m	5.62m	13.50m	150.00‡	270.00‡	.80	2.80
Cincinnati	106.00	1.46	2.29	.567y	1.093y	4.32y	11.175y	164.40	254.10	.75m	2.80m
Cleveland	108.00	1.46	2.29	.49x	.945x	3.96x	10.66x	158.00m	245.65m	.75m	2.95m
Dallas	112.00	1.46	2.54	.436	.822	3.234b	9.176	.....	.....	.49	1.60
Denver	115.00	1.55	2.54	.43dd	.74dd	3.18dd	....	.....	.....	.74m	2.50m
Detroit	108.00	1.46	2.29	.72	1.39	5.58	14.91	240.00m	360.00m	.80	3.20
Kansas City	113.00	1.46	2.29	.515	.92	3.64	9.20	216.70	465.00	.70g	3.00g
Los Angeles	124.00	1.53	2.29	.51f	1.07f	5.24f	13.06f	228.20f	348.90f	.95	2.70ff
Minneapolis*	112.00	1.50	2.42	.72mo	1.32mo	5.32mo	....	.....	.....	1.36h	3.87h
Montreal	115.00	....	....	.83z	1.59z	5.25z	....	.....	.....	1.17j	3.11j
New Orleans	101.50	1.44	2.42	.513	.93	5.15	....	265.00bb	450.00bb	.65	2.29
New York	111.35	1.46	2.20	.64	1.21	4.86	12.71	.....	.....	1.15	2.50
Philadelphia	110.00	1.44	2.20	.65	1.25	4.95A	12.65A	300.00‡	350.00‡	1.55h	3.75h
Pittsburgh	109.00	1.46	2.20	.406m	.772m	2.85m	7.652m	147.00	230.00	1.05h	2.50h
St. Louis	112.00	1.46	2.29	.51	.93	3.65	8.58	160.00l	300.00l	1.20il	2.70kl
San Francisco	122.00	1.55	2.29	.61d	1.20d	5.03d	12.57d	240.00l	400.00l	.73	3.02
Seattle	124.00	1.55	2.42	.51b	.91b	....	....	150.00c	.....	.86ee	2.56ee

‡ Delivered. a Class B & heavier. Based on existing freight rates; subject to rate change. Gas pipe and class A, $5 per ton additional. 4 in., $7 per ton additional. 30 in. and larger, usually, $1 per ton less. b Extra strength ASTM C 200–44T. c 4-in., $90. d SS361-A. e 30-in. f F.o.b. factory. g Culvert pipe. Reinforced, ASTM C76–41. h Reinforced, ASTM C75–41. i Reinforced, ASTM C76–37. j Centrispun. No. standard specifications in Can. l F.o.b. plant. m Truck delivery. o Listed price is based on LCL (no minimum). p Less than 5 tons, per price per ft. t Within switching limits. u ASTM C13–40. v C.L.f.o.b. origin, freight allowed. x 2 ft. lengths. y 3 ft. lengths. z CESA A 60–1941 specifications used. aa *Extra strength ASTM C–200–50.* A standard strength. * 6" to 8", $1.67 per ft.; carlots, F.o.b. track Class 150. bb Freight allowed to destination in city. cc Truck loads; f.o.b. plant, Newton. dd LCL delivered, f.o.b. truck. ee 1% off for cash. ff 21.

*WROUGHT STEEL PIPE—(Full standard weight)

	Butt Weld‡ Black %	Butt Weld‡ Galv. %	Lap Weld‡ Black %	Lap Weld‡ Galv. %
2½ & 3 in.	40.0	26.25	40.0	20.25
3½ to 6 in.	40.0	26.25	40.0	20.25
7 & 8 in.	40.0	19.75	40.0	19.25
9 & 10 in.	38.0	19.75	39.0	19.25
11 & 12 in.				
13 & 14 in.				
15 & 16 in.				
17 & 18 in.				
19 & 20 in.				
21 & 22 in.				
23 & 24 in.				
25 & 26 in.				
27 & 28 in.				
29 & 30 in.				
31 & 32 in.				
33 & 34 in.				
35 & 36 in.				
37 & 38 in.				
39 & 40 in.				
41 & 42 in.				
43 & 44 in.				
45 & 46 in.				
47 & 48 in.				

Mill	Butt Weld‡ Black %	Butt Weld‡ Galv. %	Lap Weld‡ Black %	Lap Weld‡ Galv. %
Lorain, Ohio	40.0	40.0	40.0	40.0
Aliquippa, Pa.	40.0	40.0	40.0	40.0
Sparrows Pt., Md.	38.0	39.0	39.0	39.0
Benwood, W. Va.	40.0	40.0	40.0	20.25
Youngstown, O.	40.0	40.0	40.0	20.25
Indiana Harbor, Ind.	40.0	40.0	40.0	19.25
	40.0	40.0	40.0	19.25
	28.35	14.75	28.35	14.75
Sharon, Pa.	40.0	40.0	40.0	20.25
Wheatland, Pa.	40.0	40.0	40.0	20.25
Etna, Pa.	40.0b	40.0b	34.75b	13.5c
Fontana, Calif.	40.0b	40.0b	20.5ab	6.25ab

b Continuous weld. c 5 and 6 in. ‡ Threaded and coupled. a 3½ to 4 in.

* WROUGHT STEEL PIPE: Discounts from standard list consumers carload prices. Base price approx. $200 per net ton. List prices per ft.: *Butt Weld:* ¼ in., 5½¢; ⅜ in., 6¢; ½ in., 6¢; ¾ in., 8½¢; 1 in., 11½¢; 1 in., 17¢; 1¼ in., 23¢; 1½ in., 27½¢; 2 in., 37¢; 2½ in., 58½¢; 3 in., 76½¢. *Lap Weld:* 3½ in., 92¢; 4 in., $1.09. 5 in., $1.48; 6 in., $1.92. Freight rates to destination to be added to price plus 3 percent tax on transportation.

WROUGHT IRON PIPE: List prices per ft. same as wrought steelpipe. Discount for Pittsburgh base. *Butt Weld* — 1 in. black, + 25.75, galv.+ 57.0; 1¼ in. black, + 25.75, galv. + 56.5, 1½ in. black, + 19.25 galv. + 52.75; *Lap Weld* — 2½ in. to 3½ in. black + 26.25, galv. + 55.5; 4½ in. to 8 in. black + 23.0, galv. + 50.75. Freight rates to destination to be added to name delivered price.

(Continued on p 101)

ANOTHER JOB MADE EASIER WITH ALEMITE "FRICTION FIGHTERS"

Speeding, simplifying lubrication at the central shop!

Headquarters for big rigs in trouble . . . that's the Central Shop!

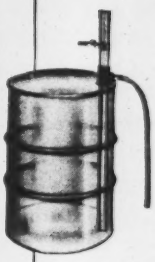
Nowhere else is smooth running operation so important, so necessary. Heavy equipment in for overhaul before the start of a new job. Big rigs pulled in for major repairs. Critical parts and assemblies being rushed out for emergency use in the field.

Whatever the job, thorough lubrication is a *must* on every work sheet . . . because minutes of care taken in the central shop can save hours in the field! Here—as throughout the construction industry—Alemite "Friction Fighters" play a vital part—saving time, saving work, saving money.

Take, for example, the high efficiency Alemite "Powerhouse" Barrel Pump shown above. It provides big volume, high pressure lubricant delivery direct from original 400-lb. drums. It can serve one outlet or be piped throughout the shop—enabling operators to move from machine to machine . . . flushing out dirt and old grease . . . lubricating the tightest, biggest bearings with an ease never before possible.

Featuring Pilot Operated Exhaust Valves—exclusive with Alemite—these "Powerhouse" Barrel Pumps offer extra power, extra output. Twelve models for all lubricants, air pressures and pump mountings.

Check these features. Check the other work-saving Alemite equipment shown here. Try them. Put them to work. They'll help you return more equipment to the line, faster, better protected than ever before!



Waste Free! Mess Free!

Alemite Transfer Pumps

Cut man hours 63% for every 100 lbs. of lubricant transferred

Keep lubricants "refinery clean" from barrel to bearing

Efficient Alemite Transfer Pumps eliminate costly hand transferring. Eliminate all risk of lubricant contamination. Assure quick, waste free, mess free loading of bucket pumps and power guns. Shown is Alemite Model 7216-A. Handles oil or grease. Air operated pump empties a 100-lb. drum in less than a minute!

Tops in Design . . . Quality . . . Service!

Genuine Alemite Fittings

Tough, case-hardened body

Original equipment on a great majority of construction equipment! These fittings—Hydraulic and Button Head—are genuine Alemite fittings. Designed by Alemite, perfected by Alemite to give you a better fitting for every job. Insist on them. Standardize with them. Be sure you have plenty in stock. Be sure you specify the genuine Alemite.

For Power Lubrication on the Job!

Alemite Portable Service Stations

Standard duty units for 100-lb. drums sectionalized to meet your needs

Featuring the famous Alemite "Atomic" Pump, these units deliver lubricant direct from 100-lb drums. Assembled with pumps, up to 5 reels, delivery hose and air compressor. The matching steel bases can be fastened together with side rails . . . mounted on a small truck or trailer and quickly driven from place to place.

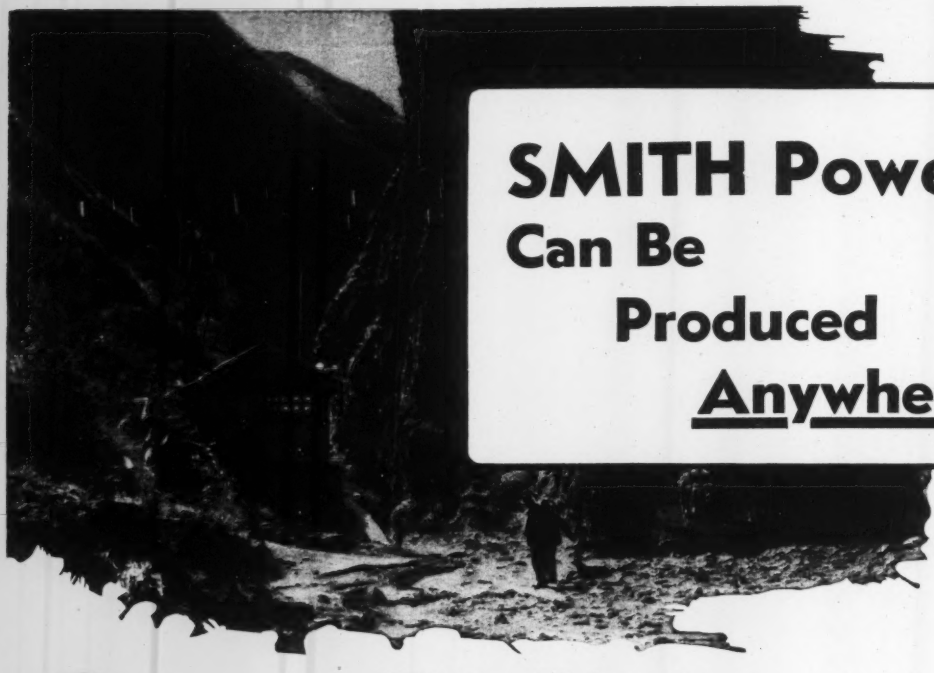
Get this FREE book!

Send today for free illustrated catalog describing this equipment. Write to Alemite, Dept. G-112, 1850 Diversey Parkway, Chicago 14, Ill.

ALEMITE

reg. U.S. Pat. Off.

A PRODUCT OF SW STEWART WARNER



SMITH Power Can Be Produced Anywhere

TWO pictures tell the story!

One is a typical example of power produced at a Station in mountainous Chile, in which a Smith Impulse Turbine provides the people of a remote section with electric current.

The other is a representative Smith-Kaplan Turbine installation in a more densely populated, flat district, of which there are many throughout the world.

Whatever your problem is, or however difficult it may appear, you will find the answer in our more than 77 years of hydraulic experience — and the unit best-suited to your own particular needs! Just put your problem in our hands!

S·MORGAN SMITH COMPANY
YORK·PENNSYLVANIA~U·S·A·

If It's Hydraulics-Put It Up to Us·

POWER by SMITH

LUMBER, TIMBER, PLYWOOD—PER M FT., B.M., CARLOAD LOTS F. O. B.

SHORT LEAF YELLOW PINE AND DOUGLAS FIR

All S. L. Y. P. is No. 2 common or better and for No. 1 N. C. Box. (Prices in Bold Face)

All Fir boards, dimensions,"planks No. 2. Fir small timbers and timbers are No. 1 Lengths up to 20 ft.

(Prices in italics)

	1x6 s4s	1x8 s4s	2x4 s4s	2x6 s4s	2x8 s4s	2x10 s4s	3x12 Rgh	6x12 Rgh	12x12 Rgh
Atlanta	† **$75.00**	**$78.00**	**$69.00**	**$71.00**	**$75.00**	**$78.00**	**$77.00**	.....	.....
Baltimore	* **92.00**	**94.00**	**80.00**	**87.00**	**88.00**	**98.00**	**112.00**	.....	.....
	110.00g	*110.00g*	*110.00g*	*110.00g*	*110.00g*	*110.00g*	*110.00*	*$120.00*	*$120.00*
Birmingham	† **83.50**	**83.50**	**70.50**	**80.50**	**83.50**	**83.50**	**95.50**	.....	.....
	85.50	*85.50*	*79.50*	*79.50*	*78.50*	*78.50*	*85.50*	*85.50*	*85.50*
Boston	**102/106**a	**104/110**a	**102/106**a	**95/104**a	**96/106**a	**110/115**a	.....	.....	.....
	95.00	*95.00*	*108/112*	*102/108*	*102/108*	*102/108*	*110.00*	*110.00*	*110.00*
Chicago	**100.00	**105.00**	**92.00**	**100.00**	**101/102**	**105/106**	**105.00**	.....	.....
	100.00	*101/102*	*104/105*	*108.00*	*108/110*	*108/110*	*110.00*	*110.00*	*110.00*
Cincinnati	* **99.00**	**105.00**	**88.00**	**98.00**	**105.00**	**110.00**	**122.50**	.....	.....
	113.00	*113.00*	*115.00*	*115.00*	*115.00*	*115.00*	*143.00*	*143.00*	*143.00*
Cleveland	** **98.00**	**103.00**	**86.00**	**92.00**	**98.00**	**101.00**	.....	.....	.....
			104.00	*104.00*	*106.00*	*105.00*	*118.00*	*118.00*	*118.00*
Dallas	k† **78.00**	**80.00**	**69.00**	**58.00**	**59.00**	**59.00**	**98.00**	.....	.....
Denver	* *Not in stock*		*137.00*	*138.00*	*134.00*	*136.00*	*139.00*	*155.00*	*155.00*
Detroit	‡ **110.00**	**112.00**	**102.00**	**110.00**	**113.00**	**115.00**	.....	.....	.....
	101.50	*102.50*	*111.50*	*112.25*	*111.25*	*110.00*	*118.75*	*122.50*	*122.50*
Kansas City	* **122.00**	**122.00**	**122.00**	**122.00**	**122.00**	**122.00**	.....	.....	.....
	122.00	*122.00*	*122.00*	*122.00*	*122.00*	*122.00*	*147.50*	*157.50*	*157.50*
Los Angeles	‡ *98.00*	*98.00*	*98.00*	*98.00*	*98.00*	*98.00*	*114.00*	*124.00*	*114.00*
Minneapolis	# *130.00*	*130.00*	*135.00*	*135.00*	*135.00*	*135.00*	*150.00*	*150.00*	*150.00*
Montreal	ab85.00	90.00	85.00	90.00	100.00	100.00	.....	.....	.....
	175.00	*175.00*	*175.00*	*175.00*	*175.00*	*175.00*	*175.00*	*175.00*	*170.00*
New Orleans	† **100.00**	**100.00**	**82.50**	**85.00**	**90.00**	**94.00**	**118.00**	.....	.....
	† *90.00*	*100.00*	*103.25*	*99.25*	*97.50*	*97.50*	*120.00*	*122.50*	*120.00*
New York	‡ **109/114**	**112/117**	**110/115**	**115/120**	**120/125**	**125/130**	**150/160**	.....	.....
				Range from $115.00 to $120.00			*150/155*	*144/155*	*144/155*
New York	** **98.00**	**101.00**	**82.00**	**97.00**	**100.00**	**102.00**	**125.00**	.....	.....
	95.00	*95.00*	*104.00*	*104.00*	*104.00*	*104.00*	*110.00*	*125.00*	*125.00*
Philadelphia	‡		**Range from $114.00 to $127.00**				**114/127**	.....	.....
			Range from $125.00 to $150.00				*130/140*	*150.00*	*150.00*
Pittsburgh	†		**Range from $90.00 to $95.00**			**110/120**	**110/120**	.....	.....
			Range from $110.00 to $120.00			*110/120*	*110/120*	*140/155*	*145/155*
St. Louis	*c**119.00**c*	**123.00**c	**100.00**d	**113.00**c	**117.00**c	**126.00**c	.....	.....	.....
			*123.00*d	*133.00*e	*133.00*e	*135.00*e	*200.50*e	*200.50*	*200.50*
San Francisco	A† *86.00*	*86.00*	*70.00*	*89.00*	*89.00*	*89.00*	*68.00*	*72.00*	*72.00*
Seattle	† *80.00g*	*80.00g*	*80.00g*	*80.00g*	*80.00g*	*80.00g*	*80.00g*	*80.00g*	*80.00g*

LONG LEAF Y. P. Merchantable grade up to 20 ft.

	2x12 Rgh	12x12 Rgh
	.....	.....
	$148.00	**$148.00**
	115.50	**155.50**
	.....	.....
	.....	.....
	134.00	**134.00**
	.....	.....
	145.00	**145.00**
	.....	.....
	.....	.....
	108.00	**98.00**
	.....	.....
	.....	.....
	.....	.....
	.....	.....
	.....	.....
	.....	.....
	148.00	**149.00**
	.....	.....
	210/240	**210/240**
	190.00	**190.00**
	.....	.....
	200/210	**200/210**
	110/120	**115/125**
	.....	.....
	.....	.....

PLYWOOD

Rail freight increment (See note for base prices)

	¾"	¾"
	$22.32	$27.24
	25.92*	31.60*
	21.78	26.58
	.....	.....
	25.92*	31.60*
	.....	.....
	22.45*	27.37*
	.....	.....
	25.00*	30.48*
	.....	.....
	25.37*	30.93*
	.....	.....
	18.72	22.80
	13.92	16.98
	25.00*	30.48*
	.....	.....
	16.56	20.16
	.....	.....
	16.61*ab	20.25*ab
	19.89*	24.25*
	.....	.....
	.....	.....
	18.72	22.80
	.....	.....
	25.92*	31.60*
	.....	.....
	.....	.....
	25.92*	31.60*
	18.72	22.80
	.....	.....
	12.22*a	14.91*a
	.....	.....

† F.o.b. mill. * F.o.b. city, CL, out of yard. ** F.o.b. city, CL, direct mill shipment. ‡ Deliv. to contr. CL. 1. Retail, LCL, at yard. # Retail, LCL, deliv. 2. Deliv. truck lots. 3. and.

LUMBER: **Bold Face type, Southern Pine.** *Italics, Douglas Fir.* *a* Spruce *b* **Tax exempt.** *c* 5M lots. *d* 8–12 ft. lengths. *e* 8–16 ft. lengths. *f* 18 ft. or under. *g* No. 1 common. *i* 8 ft. lengths. *k* No. 3 common *l* 8–10 ft. lengths. *n* ½ #1, ½ #2 & ½ #3.

A **Rail freight rate from Northwest mills to San Francisco are $11.50 to $15.00 per M ft bm. From Northern Calif. mills $9.00 by rail, $9.50 by truck. All rates for surfaced stock. For rough, add $3.00 to above figures.**

PLYWOOD: Plyform grade Fir Plywood, 4' by 8' panels, 5-ply, sanded 2 sides, water resistant glue, carload lots, delivered per 1,000 sq. ft. surface. Seattle base price on ½", $176.00; on ¾", $201.00. Exterior plyform ¾" $196.00, ¾" $223.00. For other centers add rail freight increment from table on proper size. Oiling and edge sealing charges included. *a* Lower rate by water shipment. *b* 50,000 lb. minimum.

* Incl. new freight rates. Rates for other cities not avail. as we go to press.

GLASS, EXPLOSIVES, CHEMICALS

WINDOW GLASS

Discounts from jobbers list, Feb. 1, 1950*a*

Single or Double Thickness

	A quality	B quality
Atlanta	79%	80%
Baltimore	76%*d*	78%*d*
Birmingham	83%	83%
Boston	79–10%	79–10%
Chicago	78%	78%
Cincinnati	78%	78%
Cleveland	78–10–10%	78–10–10%
Dallas	75%	75%
Denver	81–5%	81–5%
Detroit	78–10–10%	78–10–10%
Kansas City	80–10%	80–10%
Los Angeles	75%	80%
Minneapolis	78–10%	78–10%
Montreal	40–5%*bc*	40–10–5%*b*
New Orleans	78%	77%
New York	82–10%	82–10%
Philadelphia	78%	82%
Pittsburgh	82%	82%
St. Louis	80–10%	80–10%
San Francisco	70%	70%
Seattle	75%	78%

EXPLOSIVES

Per lb. 40% Ammonia Gelatin in 50 lb. cases delivered in 200 lb. lots*

Atlanta	$0.2315
Baltimore	.2315
Birmingham	.1790
Boston	.2315
Chicago	.2315
Cincinnati	.2315
Cleveland	.2715
Dallas	.2390
Denver	.2365
Detroit	.2315
Kansas City	.2365
Los Angeles	.2340
Minneapolis	.2365
Montreal	21.60*hi*
New Orleans	.2365
New York	.3975*g*
Philadelphia	.2315
Pittsburgh	.2040
St. Louis	.2365
San Francisco	.2315
Seattle	.2340

Price of 60% Ammonia Gelatin is $0.0125 per lb. higher than 40%

Glass; a Jobbers' list price per box, 14 x 20, ss, $42.75 for A quality, $37.50 for B quality; 14 x 20, ds, $60.00 for A quality, $52.75 for B quality. *b* Discount from list, Apr. 1951; sales tax included, but 6% tax exemption not allowable for. *c* Single thickness. *d* Discount 6/15/52.

Explosives; * Urban prices influenced by service charges or local storage and delivery regulations do not consistently reflect quantity prices in less congested areas. *g* In borough of Kings, Queens, and Richmond and in Manhattan south of Canal St., add delivery charge of $20.00 per trip. *h* F.o.b. city per 100 lb. forcite, 40%. Forcite 60%, $23.35. *i* F.o.b. Beloeil (near Montreal).

40% Ammonia Gelatin price ranges in other than urban areas, per lb. (except Seismograph Grades)

	C/L 20,000 lb. net	Tons	200 lb. lots
E. of the Miss., except Fla. and Me.	$0.179	$0.2115	$0.2315
W. of Miss. to Rocky Mtn. States, Fla. and Maine	.184 – 1915	.2165– 224	.2365– 244
Rocky Mtn. States	.184 – 1965	.2165– 224	.2365– 249
Pacific N. W. States	.1815–.194	.214 – 2265	.234 – 2465
Pacific S. W. States	.179 – 1865	.2115– 214	.2315– 2365

PILES, TIES F. O. B.

PILES

Prices per linear foot, fir and pine, bark off, f.o.b. cars, New York. Fir based on Wash. and Ore. points to New York shipping area; pine based on freight from Norfolk.

Dimensions	Points	Length	By Rail Pine*	By Rail Fir
12-in. at butt	6-in.	30 to 50-ft.	$0.51	.....
12-in.— 2-ft. from butt	6-in.	50 to 59-ft.	.54	.....
12-in.— 2-ft. from butt	6-in.	60 to 69-ft.	.58	.....
12-in.— 2-ft. from butt	6-in.	90 to 100-ft.	.....	.....
13-in.— 3-ft. from butt	8-in.	91 to 100-ft.	.....	.....
14-in.— 2-ft. from butt	6-in.	50 to 69-ft.	.50/.68	.....
14-in.— 2-ft. from butt	6-in.	70 to 79-ft.	.78/.83	.93
14-in.— 2-ft. from butt	8-in.	80 to 85-ft.	.83/.93	.94
14-in.— 2-ft. from butt	8-in.	85 to 89-ft.	.....	1.00
14-in.— 2-ft. from butt	8-in.	90 to 100-ft.	.....	1.02

* Pine piling over 80-ft. available only in limited quantities.

RAILWAY TIES

Prices f.o.b. per tie for carload lots:		6"x8"x8' Untr.	6"x8"x8' Tr.	7"x9"x8'6" Untr.	7"x9"x8'6" Tr.
Boston	Oak	.....	.....	.....	.....
	Pine	.....	.....	.....	.....
New York	S. L. Sap Pine	$2.55	$4.35	$3.45	$5.45
	Mixed Oak	3.10	4.65	3.70	5.95
Birmingham	Hardwood	2.40	3.88*a*	2.85	4.58*a*
Chicago	Red Oak	....	4.00*a*	....	5.00*a*
Los Angeles	Douglas Fir	....	....	....	....
	Redwood	....	....	....	....
Philadelphia	Red Oak	2.60	3.95	3.45	5.10
St. Louis	White Oak	3.04	....	3.85	....
	Red Oak	2.94	3.60*a*	3.67	4.68*a*
	Sap Pine or Cypress	3.41*a*	....	4.44	....
San Francisco	Douglas Fir	2 20*e*	3.25*af*	2.92*bf*	4.30*eaf*
Montreal	Birch or Maple	.... *h*	*h*	*h*	*h*

Tr.— Treated; Untr.— Untreated. *a* Creosoted. *b* 7" x 9" x 8'. *e* Empty cell. *e* Green. *f* F.o.b. cars. *h* No constant price available. *i* Not available.

CHEMICALS

Water, sewage treatment, road work, f.o.b. carlots, New York

Bleaching powder in drums f.o.b. works, per 100 lb.	$6.00
Chlorine cylinders, liquid, per lb. f.o.b. works	.0875
Calcium chloride, 77–80%, flaked, 100-lb. paper bag, f.o.b. works, ton	25.00
Silicate of soda, 52 deg., in drums, f.o.b. works, per 100 lb.	2.20
Soda ash, 58%, in paper bags, per 100 lb. dense	1.60
Sulphate of aluminum, commercial, in 100-lb. bags f.o.b. works	1.68
Sulphate of copper, in bags, 99% per 100 lb. f.o.b. works	8.95

STRUCTURAL CLAY BUILDING TILE, BRICK AND LIME—DELIVERED

	STRUCTURAL CLAY TILE PARTITION — SCORED Per M. lots of 2,000 pieces or over, 3x12x12 in.	4x12x12 in.	8x12x12 in.	STRUCTURAL CLAY TILE—"LOAD" BEARING — SCORED Per M. lots of 2,000 pieces or over, 8x12x12 in.	10x12x12 in.	12x12x12 in.	BRICK Per M. in quantity Common backing	Straight hard	LIME Per ton, In paper, Carload lot, Hydrated finishing	Common hydrated	Pulverized, or lump
Atlanta	$195.00	$207.50	$247.50	$327.00	$342.00	$381.50	$27.38	$27.38	$19.00	$17.50	$17.50
Baltimore	183.00	195.00	366.00	415.00	541.00	618.00	36.00*k*	41.00*k*	30.00	21.00	....
Birmingham	118.00*p*	128.00*p*	236.00*p*	283.00*p*	.....	.....	23.50*ff*	28.00*gg*	26.37	17.10	*
Boston	196.00†	209.00†	392.00†	383.25†	.....	.....	34.50*p*	37.50*p*	30.00†	28.00†	*
Chicago	135.00	145.00	250.00	... ..	.....	... ..	23.00	25.00	30.80	26.00	....
Cincinnati	185.00*j*	195.00*j*	340.00*jdd*	.....	.....	.....	34.50*j*	46.00*j*	26.37*j*	24.62*j*	.....
Cleveland	172.00**	183.00**	.....	.....	.....	.....	32.00	32.00	25.50	23.50	31.00*ee*
Dallas	.....	118.00	.....	.....	.....	.....	19.75	35.25	32.00	21.80	.....
Denver	.....	.....	.....	.....	.....	.....	34.00	40.00	34.80*bb*	28.00*bb*	34.00*bb*
Detroit	127.75	136.25	255.55	.....	317.25	362.60	34.90*cc*	33.30*cc*	32.00	30.00	.....
Kansas City	115.50	122.50	245.00	245.00	303.50	367.00	26.00	26.00	30.50	24.50	27.00
Los Angeles	*r*	*r*	*r*	*r*	*r*	*r*	24.50§	.....	34.24	34.24	35.24
Minneapolis	171.50*p*	192.50*p*	386.00*p*	192.50*wp*	.....	.....	32.00*xp*	36.00	38.00*bbe*	28.00*bbe*	40.00*bbde*
Montreal	150.00*aq*	162.50*au*	300.00*au*	.....	.....	.....	31.00	41.50	34.80	32.50	24.60*u*
New Orleans	170.00	170.00	310.00	380.00	.....	.....	31.00	.....	.....	28.00	28.00
New York	138.70*h*	147.90*h*	203.40*ch*	221.90*hn*	.....	.....	35.00	.....	36.00	32.00	.....
Philadelphia	126.30	134.80	252.60	302.74	361.35	.....	32.00	42.00	25.00	23.00	2.97
Pittsburgh	112.00	117.00	189.00	216.00	279.00	317.00	36.00	46.00*y*	25.00	23.00	2.97*m*
St. Louis	139.00*cc*	160.00*cc*	322.00*cc*	395.00*cc*	.....	.....	40.00*sl*	36.00*s*	.85*aa*	.65*aa*	1.10*aaspes*
San Francisco	156.85a*	177.10a*	235.30*dda**	.....	.....	.....	37.00	.....	26.60	26.60	2.65*m*
Seattle	175.00*cc*	.....	.....	190.00*ccw*	.....	.....	39.00*s*	49.00*s*	37.50*shh*	1.45*f*	3.90*mhh*

† F.o.b. yard Roxbury. *a* Smooth. *b* Per 50 lb. bags. *c* 6 x 12 x 12 in.-3 cell. *d* Pulverized hot. *e* 5%, 10th following month. *g* 5½ x 8 x 12. *h* F.o.b. trucks, job site N.Y.C. *j* Truck load or over. *k* $1.00 discount *l* Red face. *m* Per bbl., 180 lb. *n* 7½ x 7½ x 12. Speed title. *p* Truck lots. *q* Provincial and Municipal tax extra. *r* Not used because of earthquake danger. *s* 2% discount for cash. *t* 5½ x 8 x 11¼. *u* Tax exempt. *v* Sand lime. *w* 5 x 8 x 12. *y* Stacked. *z* Pebble lime price per 80 lb. sack. *aa* Price per sack. Lime not sold per ton. *bb* LCL. *cc* Truck delivery. *dd* 6 x 12 x 12. *ee* Pebble lime. *ff* 80% common. *gg* Select. *hh* LCL. § F.o.b. yard. ‡ Per 60 lb. sack, no incr., ton price no longer quoted. ** Warehouse delivery. * F.o.b. Stockton.

PAINT, ROOFING—F.O.B. CARLOAD LOTS

	RED LEAD Per 100 lb. in 600-lb. (Approx.) bbl. Dry *a*	WHITE LEAD Per 100 lb. in 100 lb. cases in oil *w*	READY-MIXED PAINT Per gal., drums Graphite *b*	Aluminum *c*	Ferric Oxide *d*	ROOFING SUPPLIES Carload lots f.o.b. factory Rolls, slate surfaced, 85–90 lb. per sq.	Asphalt felt, per 100 lb.	Tar felt, per 100 lb.	Asphalt coating per gal.	Tar pitch 360 lb. bbl. per ton
Atlanta	$16.50	$30.125	$1.75	$2.70	$1.65	$2.06‡	$2.06‡	$2.06‡	$1.00‡	$36.00‡
Baltimore	16.25	29.75	2.65	4.10	3.22	2.50	4.17	4.17	.42	37.00
Birmingham	16.50	30.125	3.90	3.40	....	2.80	2.75	2.75	....	40.50*ee*
Boston	16.25	29.75	....	....	....	2.67*qq*	2.79*qq*	....	.42*g*	42.00*g*
Chicago	16.25	29.75	....	....	....	2.73‡*u*	3.04‡*o*	3.04‡*o*	38.00‡*bbr*	43.00‡
Cincinnati	16.25	29.75	....	....	....	2.50	2.50	2.50	.42*y*	42.36
Cleveland	16.25	29.75	2.48*pqqA*	2.88*qqb*	2.38*qqC*	2.50*q*	2.50*o*	2.50*o*	.39*y*	43.20*hh*
Dallas	16.50	30.50	....	4.05	....	3.50*q*	3.75*o*	4.35*o*	.38	46.00
Denver	16.75	30.25	3.07	5.15	2.87	3.31*o*	2.40*o*	2.40*o*	.43*ff*	44.00
Detroit	16.25	29.75	2.35	3.40	2.50	2.75	2.50*f*	2.50	.51	40.00
Kansas City	16.25	29.87	....	2.71*ys*	2.65	2.50	2.50*o*	2.50*o*	.313*	48.00
Los Angeles	16.25	30.00	3.30*	4.50*	4.20*	2.97*	2.01**	*l*	.44*	*l*
Minneapolis	16.25	28.95 29.87	....	....	....	2.40*idd*	2.50*hidd*	2.50*hidd*	.36*idd*	37.00*r*
Montreal	....	20.70	2.93*Dff*	4.05*Eff*	3.35*Fff*	4.82*t*	3.65*tf*	3.65*tf*	1.24*kt*	3.78*kt*
New York	16.25	29.75	....	....	....	2.50	2.50*o*	2.50*o*	.36*z*	37.00*
Philadelphia	16.25	29.75	3.25	3.65	3.15	2.54	2.94	2.94	.37	26.00
Pittsburgh	16.25	29.75	2.65	2.65	3.15	2.50	2.87*o*	2.87*o*	.30	42.00
St. Louis	16.25	29.75	....	....	....	2.50	2.50*h*	2.50*h*	.33*y*	38.00
San Francisco	16.25	30.00	2.40	....	3.40	2.95	4.00*aa*	....	.49	....
Seattle	16.25	30.25	2.96*m*	2.80*m*	....	3.58*mqcc*	3.05*mcc*	....	.59*mcc*	52.00*jmc*

‡ Delivered. Note: Red lead in oil 50c higher than white lead in oil. *a* Red lead prices change frequently due to pig lead price changes. *b* U. S. War Dept. Spec. 3-49A. *c* ASTM Spec. D266–31. *d* 80% minimum ferric oxide. *e* 15 lb. *f* Per 432 sq. ft. *g* F.o.b. yard, Roxbury. *h* Per roll. 65 lb. *i* Net carload lot prices; Minneapolis and vicinity. *j* Asphalt pitch. *k* Per cwt. *l* Not used. *m* 1% discount for cash. *n* F.o.b. city. *o* Per 60-lb. *p* 6-drum. *q* Per 90-lb. roll. *r* F.o.b. factory Chicago. *s* 466 Med. *t* Federal tax included. *u* Per 90 lb. square. *v* Per ton. *w* Price to large paint contractors is $1.25 less. *x* Mineral surfaced. *y* 55-gallon container. *z* Drums. *aa* Approximate cost per 100 lbs. *bb* Roofers coating and cement. Price per ton. *cc* LCL, truck delivery. *dd* 2% cash discount. *ee* Asphalt, in 100 lb. package. *ff* 5-gal. drums. *gg* F.o.b. factory. *hh* Incl. freight. *A.* TTP 27. *B.* TTA 468A. *C.* TTP 31A. *D.* Std Black. *E* Ready-mixed, *F.* Over 80% ferric oxide. * Aver. wt. approx. 500 lbs

SKILLED AND COMMON WAGE RATES—PER HOUR

	Bricklayers	Carpenters	Struct. Iron Workers	Hoisting Engineers	Plasterers	Electrical Workers	Steamfitters	Common Labor Building	Common Labor Heavy Const.
Atlanta	$2.90	$2.35	$2.60	$2.25	$2.75	$2.60	$2.90	$1.13	$1.13
Baltimore	3.20*d*	2.58	3.125*t*	2.85/3.00	2.75	2.875	2.875	1.565*t*	1.565*t*
Birmingham	3.00	2.24	2.50	2.16	2.52	2.75	2.65	1.225	1.325
Boston	3.06*n*	2.625	2.82	3.00	3.05	3.00*d*	2.90*d*	1.99*n*	1.99*n*
Chicago	3.25*k*	3.00*m*	3.05*m*	2.80	3.43*v*	3.212*f*	3.09*v*	2.20*m*	2.20*m*
Cincinnati	3.12	2.625	2.815	2/2.50 3.05	2.90	2.90	2.90	1.92	1.92
Cleveland	3.12	3.075*d*	3.075	3.075	3.075	3.075	3.07*C*	2.325	2.325
Dallas	3.4375	2.4875	2.625	2.50	3.437	2.75	2.7625	1.325	1.35
Denver	3.45	2.625	2.50	2.63	3.30*w*	2.90	2.82	1.725	1.725
Detroit	3.18*m*	2.93*m*	3.18*m*	2.90	3.31*m*	3.05	3.00*v*	2.18*m*	2.18*m*
Kansas City	3.50	2.55	2.68	2.515/2.76	3.175	2.70	2.75	1.88	1.88
Los Angeles	3.175	2.57	2.70	2.45	3.437	2.75	2.90	1.94	1.94
Minneapolis	3.05	2.55	2.72	2.50	2.90	2.71*n*	2.70	1.82	1.82
New Orleans	2.85	2.22	2.65	2.50	2.325	2.65	2.65	1.225	1.225
New York	3.85*w*	3.24*AB*	3.50*B*	3.50*B*	3.95*A*	3.795*as*	3.445*bp*	2.05	2.05
Philadelphia	3.61*z*	2.90	3.32*r*	3.15	3.475*	3.45*	3.29*	1.75	2.05
Pittsburgh	3.40	3.00	2.875	3.00	3.15	3.00	3.00	1.90	1.90
St. Louis	3.55*c*	2.90*A*	2.90	2.95	3.00	3.09*c*	2.90	1.97	1.97
San Francisco	3.25*b*	2.705	2.85	2.56	3.125*	3.00	2.75	1.85	1.85
Seattle	3.30	2.58	2.78	2.71	3.15	2.80	2.75	2.18	2.14
Montreal*†	1.90	1.70	1.80	1.60	1.90	1.80	1.85	1.20	1.20

* Cost of living bonus now included in basic wage. ‡ Includes 5¢/hr tool replacement. † Plus 2% vacation pay.

a 6 hr. day. *b* 7 hr. day. *c* Incl. 3% vac. stamp fund for bricklayers; 4% for electricians plus 7½¢ WF. *d* Incl. 10¢ H&WF. *e* Incl. 6¢ H&WF. *f* Incl. 6% WF. *g* Incl. 11½¢ WF. *h* $2.45 homes & housing plus 5¢ VF. *i* Incl. 3½% WF and 15¢ PF. *j* Incl. 9¢/hr WF. *k* Incl. 7½¢/hr WF. *l* Incl. 4% VF. *m* Incl. 5¢/hr WF. *n* Incl. 6¢/hr WF. *o* Incl. 3% WF. *p* Incl. 3% WF, 3% PF. *r* Incl. 3% WF and 20¢ PF. *s* Incl. 5% W&PF, 4% VF, 1% NC, 6 PH. *t* Incl. 7½¢ H&WF. *u* Incl. 1½% WF. *v* Incl. 10¢ WF. *w* Negotiating. *z* Await. WSB appr. *y* Incl. 8% WF. *z* Incl. 7½¢ IF, 5¢ H&WF. *A* Incl: 10¢ WF, 10¢ PF & 10¢ VF. *B* Incl. 3% WF, 6 PH. *C* Incl. 7¢ IF.

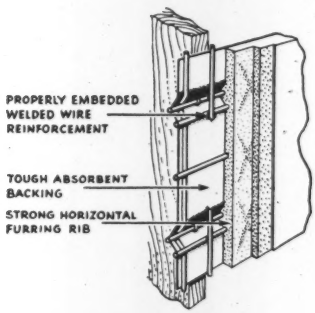
MEXICO CITY PRICES

In Pesos, F.o.b. City		Sept.'52	Oct.'52
Common Wages—Building (8 hr. day)	av. per hr.	.83*	.83*
Common Wages—Heavy Const. (8 hr. day)	av. per hr.	.93*	.93*
Skilled Labor Wages Carpenters (8 hr. day)	av. per hr.	2.25*	2.25*
Bricklayers (8 hr. day)	av. per hr.	2.25*	2.25*
Struct. Iron Workers (8 hr. day)	av. per hr.	1.50*	1.50*
Struct. Steel Shapes 3"–15" x 12 meters	per metric ton	1,193.13	1193.13
Reinf. Steel, Corr. Rods ¼" x 11 meters	per ton	1,355.67	1355.67
⅜" x 11 meters	per ton	1,344.46	1344.46
½" x 11 meters	per ton	1,333.25	1333.25
⅝" x 11 meters	per ton	1,322.04	1322.04
¾" x 11 meters	per ton	1,322.04	1322.04
1" x 11 meters	per ton	1,322.04	1322.04
Gravel truck load of 3½ cu. meters Blue Gravel	per tr. load	50.00	50.00
Rose Gravel	per tr. load	48.00	47.00
Cement, Std. Port. (Tolteca)	per ton	160.00	160.00
Lumber Mex. Sacred Fir (OYAMEL)	per M ft.	850.00	870.00
1st Class Pine	per M ft.	1400.00	1400.00
2nd Class Pine	per M ft.	1100.00	1100.00

* Increase by 1/6th—work 6 days, paid for 7 days.

ENR Skilled Average: (Bricklayers, Carpenters, Ironworkers): $2.937 **ENR Common Average:** $1.817

Pittsburgh Steeltex Lath guards against plaster cracks in Wisconsin's new "Motelized" hotel

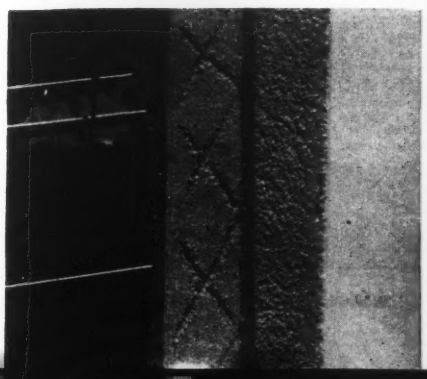


Note from the drawing at the left and the photo below the horizontal furring rib formed in the welded wire mesh. This provides a truss system which greatly strengthens the plastered wall.

By combining the informality of a tourist court with the services of a downtown hotel when he designed the Mead Hotel in Wisconsin Rapids, Wisconsin, architect Donn Hougen may well have started a trend. He may well also have started a trend when he specifically designed every facet of the structure for low upkeep and maintenance in years to come.

It was with the latter in mind that he specified 40,000 sq. yds. of Steeltex Lath for plaster on the job. The combination of strong, rigid, welded-wire mesh and absorbent backing offered positive resistance against settling and distortion. Said architect Hougen, "When we use Steeltex Lath for plaster, we are assured that the plasterer will use the required amount of plaster, and that he has sufficient reinforcing in the lath to guard against plaster cracks."

For details on how you too can take advantage of the strong, reinforced walls offered by Steeltex, see our catalog data in Sweet's or write for catalog D.S. 130, Dept. ENR, Pittsburgh Steel Products Company, Grant Building, Pittsburgh 30, Pa.



Pittsburgh Steel Products Co.

A Subsidiary of Pittsburgh Steel Company

CONSTRUCTION REPORTS

Bids Asked—Low Bidders—Contracts Awarded—First Section

Compiled by Business News Department—Engineering News-Record, 330 W. 42nd St., New York 36, N. Y.
ELSIE EAVES, Manager — *J. A. MAHONEY, Reports* — *M. R. ROESSLER, Statistics*

NEW ENGLAND

BIDS ASKED—HEAVY CONSTRUCTION

† **Me., Presque Isle**—READINESS BLDG.—B.A. On Or About 11/14—U. S. Eng., 857 Commonwealth Ave., Boston, readiness bldg., parking areas, driveways, walks, exterior utilities, Presque Isle Air Force Base, $100,000-$500,000. Plans deposit $25. CD 9/13.

Mass., Leominster—B.A. 11/17—City, Bd. Water Comrs., Municipal Bldg., pump station, appurtenant work, $50,000. Plans deposit $50. Coffin & Richardson, Inc., 68 Devonshire St., Boston, engr.

HEAVY CONSTRUCTION

LOW BIDS AND CONTRACTS

MAINE—State Hy. Comn., State House, Augusta.
A. P. Wyman, Inc., Waterville, Me. CA. **$370,752.** b. macad. 3.71 mi. S.P. 990 N, Harrington and Columbia;
H. E. Sargent, Inc., Stillwater, Me. CA. **$524,751.** b. conc. 6.649 mi. S.P. 992 D, Northport. Bids Oct. 22. CD 10/14.

▲ **CONNECTICUT**—State Hy. Comn., State Office Bldg., Hartford,
M. A. Gammino Constr. Co., 728 Valley St., Providence, R. I., CA. **$1,399,378,** grading, drainage, pavement, Fed. Aid Proj. FI-130 (22), Vernon and Tolland. Bids Oct. 6. CD 10/10, under LB.

BUILDINGS

LOW BIDS AND CONTRACTS

James S. Kelliher, 1245 Hancock St., Quincy, Mass. CA. **$506,550,** est. $500,000. PUBLIC HEALTH CENTER, BROOKLINE, MASS. Town, Dpt. P. Health, c/o Bd. Selectmen, Town Hall, Brookline, Mass. CD 9/29, under LB.

Construction Units, Inc., 199 Washington St., Boston, Mass. LB. **$983,644,** est. $800,000. Edward Devotion Elementary SCHOOL addn., imprvs., Harvard St., BROOKLINE, MASS. Town, Bldg. Comn., Town Hall, Brookline, Mass. Bids Oct. 23. CD 9/26.

▲† **George A. Fuller Co.,** 11 Beacon St., Boston, Mass. LB. **$6,310,000.** Quartermaster Development LABORATORY, Lake Cochituate, Eng. 19-016-53-8, NATICK, MASS. U. S. Eng., 857 Commonwealth Ave., Boston, Mass. Bids Oct. 24. CD 10/14.

Rich Bros. Constr. Co., 410 Park Square Bldg., Boston, Mass. LB. **$693,396.** Spaulding SCHOOL, Oak Hill Village, Brookline St., NEWTON, MASS. City, P. Bldg. Comn. Office, City Hall, Newton, Mass. Bids Oct. 22. CD 10/1.

▲ **Trail Developers; Inc.,** c/o Charles Riley, 122 Bridgham St., Providence, R. I. Owner Builds. **$1,000,000.** HOUSING DEVELOPMENT, Kent Gardens, Wompanoag Trail, EAST PROVIDENCE, R. I. CD 9/30.

▲ **Frouge Constr. Co., Inc.,** 74 Goodsell St., Bridgeport, Conn., LB. **$5,287,000,** MR-45 moderate rental HOUSING, Slater Rd., NEW BRITAIN, CONN. City Housing Auth., 16 Armistice St., New Britain, Conn. Bids Oct. 21. CD 9/26.

MIDDLE ATLANTIC

BIDS ASKED—HEAVY CONSTRUCTION

† **Md., Patuxent River**—FEEDER FOR ELECTRONICS—B.A. 11/12—Dist. P. Wks. Office, Potomac River Naval Command, Naval Gun Factory, Wash., D. C., feeder for electronics area, Naval Air Station, NOY 73418. Plans deposit $10. CD 7/17/52.

† **N. Y., Rome**—BUILDING PARTITIONS MODIFICATION—B.A. 11/12—Purch. & Contg. Office, Griffiss Air Force Base, Rome, modification of partions Bldg. 106, Griffiss Air Force Base, 30-602-53-16. CD 9/14/51.

† **Pennsylvania**—B.A. About 11/12—U. S. Eng., 24 St. and Maryland Ave., P.O. Box 1715, Baltimore 3, Md., drilling test well in vicinity of Blue Knob State Park, approx. 6 mi. west of Claysburg, Blair Co., Serial No. ENG 18-020-53-28.

▲ **Pa., Phila.**—B.A. 11/17—Dpt. Procurement, City Hall Annex, Queen Lane Raw Water Pumping Station. $1,200,000. Samuel S. Baxter, water comr. CD 8/9/46.

New York—TRAFFIC CONTROL SIGNALS—B.A. 11/20—At office Henry A. Cohen, dir. Bureau Contracts & Accounts, The Governor Alfred E. Smith State Office Bldg., Albany, traffic control signals 0.16 mi. Taconic State Parkway, Cont. TSP-52-3. $9,000. Plans deposit $10; adv. ENR 11/6.

† **N. J., Wrightstown**—COMMISSARY, etc.—B.A. On Or About 12/5—U. E. Eng., 121 N. Broad St., Phila., 1, Pa., commissary, subsistance, warehouse at McGuire Air Force Base, ENG 36-109-53-168. CD 9/13/51.

† **N. J., Wrightstown**—WAREHOUSE—B.A. On Or About 12/9—U. S. ENG., 121 N. Broad St., Phila., 1, Pa., inflammable warehouse, McGuire Air Force Base, Eng 36-109-53-169. CD 9/13/51.

† **Del., New Castle**—B.A. On Or About 12/11—U. S. Eng., 121 N. Broad St., Phila., 1, Pa., type "C" aircraft washrack at New Castle County Airport ENG 36-109-53-174.

N. Y., New York—OFFICE—B.A. 11/12—State Insurance Fund, William B. Folger, exec. dir., 625 Madison Ave., (1) demolition existing bldgs., removal of all debris; (2) constr. foundations (3) furnishing, erecting structural steel for home office bldg., 199 Church St. Plans deposit $10 each for (1) and (2), $25 for (3). Lorimer Rich Assoc., 215 Montague St., Brooklyn, archts.; adv. ENR 11/6. CD 6/9/50.

N. Y., Elmhurst—HIGH SCHOOL—B.A. 11/19—Bd. Educ., 49 Flatbush Ave. Exten., Brooklyn, Zone 1, modernizing Newton High School. Plans deposit $20.

N. Y., Brooklyn—HOUSING—B.A. 12/2—New York City Housing Auth., 63 Park Row, New York, Zone 38, general constr. and fdns., heating and ventilating, electrical work, plumbing, furnishing and erecting elevators for Cypress Hills Houses (Proj. No. NYS-58-2) in area bounded generally by Sutter, Euclid and Blades Aves., Chestnut St., Dumont and Euclid Aves., Linden Blvd. and Fountain Ave. Plans deposit $75. $25 elevators. Extended date. CD 10/6.

SOON LETS CONTRACT—BUILDINGS

Pa., Phila.—CONVENT—St. Matthews Roman Catholic Church, 3105 Cottman St., soon lets contract new convent, school addn., alterations, $300,000. Kieresson & Mulrooney, Fox Bldg., archts. Charles H. Wolf, 112 S. 16 St., engr.

HEAVY CONSTRUCTION

LOW BIDS AND CONTRACTS

† **Steen Contg. Co.,** 541 Front St., Norfolk, Va., LB **$54,736.** Maintenance dredging, Twitch Cove and Big Thoroughfare River, Smith Island, Upper Thoroughfare, Deals Island, Somerset Co., Pealiquor Shoal, Choptank River, Caroline Co., CIVENG 18-020-53-13, MARYLAND. U. S. Eng., 24 St. and Maryland Ave., Baltimore, Md. Bids Oct. 21. CD 10/13.

MARYLAND—State Rds. Comn., 108 E. Lexington St., Baltimore, Zone 2,
Lawson & Co., Williamsburg, Va. LB **$336,988.** Grading, drainage, surf. 2.315 mi. Rte. 416, AA 428-1-515, Anne Arundel Co. Bids Oct. 21. CD 10/7.

BUILDINGS

LOW BIDS AND CONTRACTS

Bonanno Bros., 415 32 St., Union City, N. J. CA, **$500,000.** FACTORY on 3 acre site on Park Place East WOODRIDGE, N. J. Julius Blum & Co., 532 W. 22 St., New York 11, N. Y. John & Lawrence Scacchetti, 415 32 St., Union City, N. J., archts.

Baltimore Contractors, Inc., 711 S. Central Ave., Baltimore, Md. CA **$109,000.** 71x147x14 ft., steel, masonry freight TERMINAL, 160 S. Oldham St., BALTIMORE, MD. Super Service Motor Freight Co., S. Central Ave. and Bank St., Baltimore, Md. J. E. Moxley & Son, 1722 Ellamont St., Baltimore, Md., archts. J. L. Faisant & Assoc., 21 W. 25 St., Baltimore, Md., engrs.

Shapiro Engineering Corp., 911 15 St. N. W., Wash., D. C. CA Est. **$640,000.** 164 APARTMENT Units SILVER SPRING, MD., Sixteenth Street Woods Development Corp., 911 15 St. N.W., Wash., D.C. J. R. Shapiro, 911 15 St. N.W., Wash., D. C., archt.

PROJECTS COVERED

Projects—By Size

Construction projects here reported cover the United States and Canada, are of these minimum sizes or larger: water supply, earthwork, waterways $34,000; other public work $60,000; industrial buildings $82,000; other buildings $300,000.

Classes of Construction

(Name in order of Listing)

Water Supply	Latin America
Sewers, Waste Disposal	Public Buildings
Bridges	Commercial Buildings
Streets & Roads	Industrial Buildings
Earthwork, Waterways	Unclassified

Stages Reported

PROPOSED WORK: Including appointment of engineers or architects.

BIDS ASKED (new announcements only). For full calendar, see also preceding issues of ENR.

LOW BIDDERS: On jobs below $500,000 value all low bidder news will be the final reports published on the projects involved except where award is not made to the low bidder. In this case, a supplementary contract award report will be published.

CONTRACTS AWARDED: Except awards to low bidders previously reported in low bidder stage.

Dates shown are of issue in which last previous report was published.

Symbols and Abbreviations Include:

†	Federal Government
▲	Project of $1,000,000 or over.
B.A.	Bids Asked
ENR	Engineering News-Record
CD	Engineering News-Record Construction Daily

SOUTH

BIDS ASKED—HEAVY CONSTRUCTION

† **Ga., Atlanta**—B.A. 11/18—At office Director Atlanta Field Office, Public Housing Admin., Peachtree-Seventh Bldg., grading, sewer water, paving, electrical distr. for 135 single family dwelling units. Eugene R. Martini, 175 Peachtree St. N.E., landscape archt. and planning consultant.

† **Ga., Fort Benning**—PUMPS—B.A. 11/18—U. S. Eng., 200 E. Julian St., Savannah, installing pumps and misc. construction, Eng-08-123-53-18.

Tenn., Fountain City—B.A. 11/18—Fountain City Sanitary Dist., Fountain City, sanitary sewer imprvs. $750,000. Extended date. Polk, Powell & Hendon, Stallings Bldg., Birmingham, Ala., engrs. CD 10/16.

† **Tennessee**—B.A. About 12/10—U. S. Eng., 303 Federal Office Bldg., Nashville, Zone 1, furnishing, installing three 12,000 kw generators for Cheatham hydroelectric power plant, the Cheatham Proj. is located at mile 148.7 on Cumberland River approx. 23 mi. upstream from city of Clarksville, Serial No. CIVENG 40-058-53-12.

BIDS ASKED—BUILDINGS

▲ **Ga., Albany**—HOUSING—B.A. 11/14—Albany Housing Auth., Albany, 140 housing units, $1,000,000. Bid date changed. CD 10/20.

▲ **Ga., Swainsboro**—HOUSING—B.A. 11/20—Swainsboro, Housing Auth., Swainsboro, 100 housing units, Proj. GA-131-1, GA 131-2, $1,000,000. Plans deposit $100. CD 4/1/52.

▲ **Ala., Montgomery**—STATE OFFICE—B.A. 11/25—State Building Comn., State Capitol, Montgomery, state office, $3,250,000. Warren, Knight & Davis, Protective Life Bldg., Birmingham, archts. CD 9/19/51.

▲ **Ala., Birmingham**—MILL—B.A. 12/1—Cosby-Hodges Milling Co., c/o Paul Berg, engr., Utility Bldg., Fort Wayne, Ind., feed mill, $1,000,000. Plans deposit $200. Extended date. CD 9/11.

▲ **Ala., Decatur** — HOUSING — B.A. 12/1 — Decatur Housing Auth., Decatur, 136 housing units, Proj. Ala. 48-3. $1,300,000. Paul W. Hofferbert, Gadsden, archt. CD 4/1/52.

Ga., Blakely—HOUSING—B.A. 12/1—Blakely Housing Auth., Blakely, 84 housing units, Proj. GA-114-1 and GA 114-2, $850,000. CD 3/28/52.

Fla., Sanford—HOSPITAL—B.A. After 12/1—Bert Fish Testamentary Trust, Fish Bldg., Deland, hospital. $600,000. G. M. Peek, Pioneer Bldg., Deland, archt. CD 7/30.

N. C., Statesville—CHURCH—B.A. 12/2—First Baptist Church, Statesville, church. $500,000. Extended date. Charles C. Benton & Sons, Wilson, archts. CD 1/13/50.

Ala., Birmingham—ADULT EDUCATION CENTER—B.A. 12/3—University of Alabama, Jefferson-Hillman Hospital, 619 S. 19 St., adult education center. $675,000. Warren, Knight & Davis, Protective Life Bldg., archts. CD 5/23.

HEAVY CONSTRUCTION

LOW BIDS AND CONTRACTS

NORTH CAROLINA—State Hy. & P. Wks. Comn., Raleigh,
John H. Brinkley, Thomasville, N. C. LB **$152,300,** est. $175,000-$200,000, structures, U. S. 64, Proj. 5200 F-278 (4), Davidson Co., CD 10/12 under Streets and Roads;
A. M. Tuck, Box 203, Greenwood, S. C. LB **$75,421,** est. $50,000-$75,000, bridge and approaches 0.42 mi. N. C. 731 over Little River, Proj. 5527, S-473 (1), Montgomery Co. CD 10/12.

▲ **NORTH CAROLINA**—State Hy. & P. Wks. Comn., Raleigh,
J. S. Hill Constr. Co., Washington, N. C. LB **$84,699,** est. $75,000-$100,000, STBC, bit. surf. tr. or sand asph. or b. conc. surf. and structures 4.72 mi., Proj. No. 1-552, S-415 (1), Martin Co.; LB **$74,737,** est. $50,000-$75,000, grading, structures 1.2 mi. U.S. 64 and NC 32, Proj. 1968, Washington Co.;
White Constr. Co., Kinston, N. C. LB **$171,196,** est. $200,000-$225,000, STBC and sand asph. base and surf. 8.4 mi. Proj. 2.557, S-433 (1), BS 2-7-24-23, Pitt and Greene Counties;

Dickerson, Inc., Box 448, Monroe, N. C. LB **$280,971,** est. $225,000-$250,000, traffic bound macad. and b. conc. binder and surf. course 4.2 mi. N.C. 55, Proj. 2631, F-90 (3), Pamlico Co.;

F. D. Cline Paving Co., Box 349, Raleigh, N. C. LB **$165,660,** est. $175,000-$200,000, subgrade reinf., sand asph. base and surf and structures 7.07 mi. U. S. 17, Proj. 5103, F-280 (5), Brunswick Co.;

A. B. Burton & Co., Box 817, Lynchburg, Va., LB **$119,983,** est. $100,000-$175,000, grading 4.9 mi. U.S. 70, Proj. 4174, Durham Co.;

Taylor Constr. Co., Inc., Johnson City, Tenn., LB **$212,-527,** est. $300,000-$400,000, grading 7.2 mi. U. S. 64, Proj. 5200, F-278 (4), Davidson Co.;

Ballenger Paving Co., Box 1046, Greenville, S. C., LB **$624,139.** est. $400,000-$500,000, grading, subgrade reinf., c. conc. pavement and structures 1.325 mi. Proj. 5326, U-676 (3), Guilford Co.;

Clement Bros. Co., Inc., Lenoir, N. C. LB **$306,025,** est. $300,000-$400,000, traffic bound macad. stabil. aggregate base course and bit. surf. tr. 6.48 mi. U. S. 29 and 74, Proj. 6327, F.I. 426 (6), Gaston Co.;

Wayne Eng. & Constr. Co., Inc., Box 306, Mt. Olive, N. C. LB **$60,914,** est. $50,000-$75,000, STBC, bit. surf. tr. and structures 4.38 mi. Proj. 4-159, S-615 (1), Johnston Co. Bids Oct. 21. CD 10/12.

▲ † **Suber & Co.,** Whitmire, S. C. and **A. R. Thomson,** Rutherford, N. C. LB **$1,805,668,** runways and taxiways at Charleston Air Field, No. 38-081-53-8, CHARLESTON, S. C. U. S. Eng., Custom House, Charleston, S. C. Bids Oct. 22. CD 10/1.

City, Florence, Ala., rejected bids Sept. 23, intercepting sewers and sewage pumping station, FLORENCE, ALA., LB, **$922,693.** CD 9/30, under LB.

Butler & Cobbs, Bell Bldg., Montgomery, Ala. LB **$887,640.** completion of livestock coliseum, MONTGOMERY, ALA. Alabama Agricultural Center Bd., State Capitol, Montgomery, Ala. Bids Oct. 23. CD 10/17.

▲ † **T. H. Pearce & Co.,** P. O. Box 1293, Columbus, Ga. LB **$1,923,677.** facilities for emergency type railhead, CAMP SHELBY, MISS. U. S. Eng., P. O. Box 1169, 2301 Grant St., Mobile 7, Ala. Bids Sept. 25. CD 7/28.

† **Lee & Dean Constr. Co.,** P. O. Box 991, Gladewater, Tex. CA **$530,546.** family units, bachelor officer's quarters, Lake Charles Air Force Base, Inv. 53-41, LAKE CHARLES, LA. U. S. Eng., 606 Santa Fe Bldg., Galveston, Tex. CD 10/21, under LB.

† **Jack Moorman,** 205 Milan St., Shreveport, La., LB. **$292,362.** electrical distr. sys., Barksdale Air Force Base, SHREVEPORT, LA. U. S. Eng., 300 Broadway, Little Rock, Ark. Bids Oct. 17. CD 10/14.

KENTUCKY—Commonwealth of Ky., Frankfort,

Lyons & Breeden, Rogersville, Tenn. LB. **$65,735.** bridges, traffic bound limestone 0.612 mi. Sturgis-Sullivan Rd., RS 113-907, Union Co. Bids Oct. 17. CD 9/30.

▲ KENTUCKY—Commonwealth of Ky., Frankfort.

W. C. Snider, Danville, Ky. LB. **$308,100.** traffic bound limestone 3.316 mi., Newport-Maysville Rd., S 198 (2), SP 12-126, Bracken Co.;

Forcum-James Co., Dyersburg, Tenn. LB. **$272,041.** bit. surf. Class I grade separation 1.396 mi. Fulton-Bypass Rd., F 131 (17), FG 146 (17), F 146 (18), SP 38-467, 38-447, Fulton Co.;

Blackburn, Ferguson Contg. Co., Fredonia, Ky. LB. **$123,-341.** local bank or creek grav. 7.918 mi. Jordan-Fulton Rd., S 392 (1), RS 38-167, Fulton Co.;

Robinson & Lashbrook, Owensboro, Ky. LB. **$94,339.** reconstr. traffic bound limestone 6.5 mi. Utica-Pleasant Ridge Rd., RS 30-137, Daviess Co.;

Davis & Shelton Constr. Co., Sandy Hook, Ky. LB. **$107,-597.** traffic bound limestone 6.629 mi. Farmers-Sharkey Rd., S 411 (1), RS 103-362, Rowan Co.;

Tye & Wells Co., Eminence, Ky. and **Cline Constr. Co.,** Pikeville, Ky. LB. **$220,516.** traffic bound limestone (Alternated) 10 in. steel bearing pile, 3.686 mi. Plum-East-Union Rd., S 375 (1), S 439 (2), SP 91-339, 91-279, Nicholas Co.;

Greenville Quarries Inc., Greenville, Ky. LB. **$71,989.** traffic bound river grav. 3.011 mi. Geneva-Aizey Rd., S 222 (1), SP 51-279, Henderson Co. Bids Oct. 17. CD 9/30.

▲ **Birmingham Building Co.,** 7th Ave. S., Birmingham, Ala. CA. **$1,346,757.** natural gas sys., CLARKSVILLE, TENN. City, Clarksville, Tenn. CD 7/18.

▲ **R. P. Farnsworth & Co., Inc.,** 1515 S. Salcedo St., New Orleans, La., CA **$1,565,393,** 5 mi. sewer extens. to divert sewerage now dumped in Tennessee Chute, into the Mississippi River known as the Nonconnah Proj., MEMPHIS, TENN. U. S. Eng., P. O. Box 97, Memphis 1, Tenn. Bids Oct. 7. CD 10/16, under LB.

BUILDINGS

LOW BIDS AND CONTRACTS

Loyalty Corp., 2000 Virginia Beach Blvd., Norfolk, Va. CA. Approx. **$95,000.** 1 story, approx. 12,000 sq. ft. masonry WAREHOUSE and OFFICE, NORFOLK, VA. Building Materials Corp., 940 W. 21 St., Norfolk, Va. King & Wells, 811 W. 21 St., Norfolk, Va., archts.

▲ **John Crosland Co.,** 120 E. 3 St., Charlotte, N. C. Owner Builds. **$6,000,000.** 500 RESIDENCES, Marsh Rd., CHARLOTTE, N. C.

William Muirhead Constr. Co., Durham, N. C. CA. **$500,-000.** PLANT addn., DURHAM, N. C. American Tobacco Co., c/o contractor.

▲ **York Building Co.,** 2016 Cameron St., Raleigh, N. C. Owner Builds. **$1,000,000.** 100 RESIDENCES, Faircloth St. and Ridge Rd., RALEIGH, N. C.

▲ **Jenkins Home Construction,** Highway 614, Charleston, S. C. CA. **$1,000,000.** 100 RESIDENCES, CHARLESTON, S. C. Forest Acres, Inc., c/o contractor.

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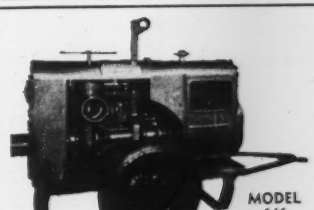

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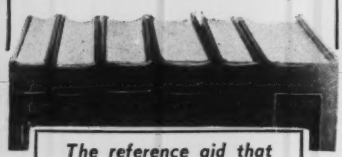

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Daniel Constr. Co., 429 Main St., Greenville, S. C. CA. **$500,000.** OFFICE, MONCKS CORNER, S. C. South Carolina Public Service Auth., Moncks Corner, S. C.

▲† Batson-Cook Co., West Point, Ga. LB. **$6,670,000.** 7 WAREHOUSE, Marine Corps Supply Depot, ALBANY, GA. Dist. P. Wks. Office, U. S. Navy, Charleston, S. C. Bids Oct. 23. CD 9/23.

Beaufort & King, 120 7 St., Augusta, Ga. Owner Builds. Est. **$400,000.** 50 RESIDENCES, AUGUSTA, GA.

Williams Constr. Co., P.O. Box 1039, Columbus, Ga. CA. Est. **$500,000.** APARTMENT, COLUMBUS, GA. C. F. Williams, c/o contractor.

De Give, Dunham & O'Neill, Grand Theatre Bldg., Atlanta, Ga., LB. **$981,000** TWIN BLDGS. ADDNS., State Hospital, MILLEDGEVILLE, GA. State Dpt. P. Welfare, State Office Bldg., Atlanta, Ga. Bids Oct. 21. CD 9/30.

Jack Culpepper, P.O. Box 666, Tallahassee, Fla. CA. **$627,000.** CLASSROOM for Business Administration at University of Florida, GAINESVILLE, FLA. State, Bd. Control, Gainesville, Fla. CD 10/14, under LB.

▲ The Mackie Co., Inc., 2818 S.W. 22 St., Miami, Fla. CA. **$1,000,000,** 100 RESIDENCES in Randall Park, MIAMI, FLA. Jefferson Mortgage Corp., c/o contractor. (Correction—owner). CD 10/10, under CA.

▲ Penn Constr. Co., 401 First Ave., Birmingham, Ala. CA. Est. **$2,000,000.** 227 RESIDENCES, PENSACOLA, FLA. Norwood Homes, Inc., c/o contractor.

A. P. Hennessy & Sons, P.O. Box 189, Station A, St. Petersburg, Fla. LB **$658,900,** Mound Park HOSPITAL addns., ST. PETERSBURG, FLA. City, City Hall, St. Petersburg, Fla. Bids Oct. 15. CD 9/14.

▲ Sprague Constr. Co., 231 S. Palm Ave., Sarasota, Fla. Owner Builds. Est. **$3,600,000.** HOTEL, SARASOTA, FLA.

Barge-Thompson Co., 136 Ellis St. N.E., Atlanta, Ga. CA Est. **$450,000.** Dial OFFICE, ALEXANDER CITY, ALA. Southern Bell Telephone Co., Hurt Bldg., Atlanta, Ga.

Brice Building Co., Box 1028, Birmingham, Ala. CA **$626,327.** Junior High SCHOOL, BESSEMER, ALA. City, Bd. Educ., Bessemer, Ala. CD 10/17, under LB.

▲ Farnsworth & Chambers Constr. Co., 3018 Leeland St., Houston, Tex. CA **$4,523,134.** general contract; **H. W. Lancaster & Sons,** 797 Roland St., Memphis, Tenn. CA **$2,175,104.** mechanical constr., plumbing, heating, air-conditioning;

Gibson & Odom Electrical Co., 4201 Thalia St., New Orleans, La. CA **$699,601.** electrical work, University of Mississippi MEDICAL SCHOOL and TEACHING HOSPITAL, JACKSON, MISS. State Bldg. Comn., Woolfolk State Office Bldg., Jackson, Miss. Grand total $7,397,-839. CD 10/20, under LB.

▲ Girdler Corp., 224 E. Broadway, Louisville, Ky. CA **$5,000,000.** PLANT addn., YAZOO CITY, MISS. Mississippi Chemical Corp., Yazoo City, Miss. CD 6/3/52.

Verville Constr. Co., Maysville, Ky. CA **$698,000.** 100 HOUSING units, MAYSVILLE, KY. Maysville Housing Auth., Maysville, Ky. CD 10/31, under LB.

Mark K. Wilson Co., Chamberlain Bldg., Chattanooga, Tenn., CA. Approx. **$505,000.** syrup concentrates PLANT addn., CHATTANOOGA, TENN. Seminole Flavor Co., Broad St., Chattanooga, Tenn. Selmon T. Franklin, 421 Poplar St., Chattanooga, Tenn., archt.

▲ Guaranty Mortgage Co., 329 Union St., Nashville, Tenn. Owner Builds. **$5,000,000.** 500 RESIDENCES, KINGSTON, TENN.

Knox Co. Bd. Educ., Court House, Knoxville, Tenn., rejected bids Sept. 26, Young HIGH SCHOOL addns., KNOXVILLE, TENN. LB **$547,419.** CD 10/2, under LB.

Carl J. Grant & Co., Falls Bldg., Memphis, Tenn. Owner Builds. **$500,000.** 50 RESIDENCES, MEMPHIS, TENN.

MIDDLE WEST

BIDS ASKED—HEAVY CONSTRUCTION

† Illinois—B.A. 11/14—U. S. Eng., 402 Locust St., St. Louis 2, Mo., levees Prairie Du Rocher, Illinois and vicinity (Edgar Lakes and Prairie du Rocher & Modoc Drainage and Levee Districts) Proj. Item 1-E, Randolph Co., CIVENG 23-065-53-48.

HEAVY CONSTRUCTION

LOW BIDS AND CONTRACTS

National Constr. Co., 23500 Lakeland Blvd., Euclid, O., LB **$776,940,** est. $600,000. Storm relief sewer in Lloyd Rd. from Lake Erie south to county line, 10 ft. brick sewer in tunnel EUCLID, O. City, City Hall, 585 E. 222 St., Euclid, O. Bids Oct. 13. CD 10/3.

▲ H. D. Tousley Co., 926 E. St. Clair St., Indianapolis, Ind., CA. Est. **$2,000,000.** primary sewage treatment units, Indianapolis Sewage Treatment Plant, INDIANAPOLIS, IND. City, Sanitary Dist., Bd. Sanitary Comrs., City Hall, Indianapolis, Ind. Bids Oct. 6. CD 9/29.

▲ ILLINOIS—Dpt. P. Wks. & Buildings, Div. Highways, Centennial Bldg., Springfield,
rejected bids Oct. 15, c. conc. 3.74 mi. U. S. 40, Clark Co. LB **$710,783;** bit. surf. 8.47 mi. F.A.S. No. 334, Ford and Iroquois Counties, LB **$143,158;** bit. resurf. 8.29 mi. U. S. 36, Scott Co., LB **$189,160.** CD 10/21, under LB.

▲ ILLINOIS—Dpt. P. Wks. & Buildings, Div. Highways, Centennial Bldg., Springfield,
J. C. O'Connor & Sons, Inc., 2104 Miner St., Fort Wayne 6, Ind., CA **$1,062,703,** c. conc. base course and c. conc. base course wid'n. 25.2 mi. U. S. 460, Jefferson and Hamilton Counties; CA **$1,735,074,** c. conc. base course and c. conc. base course wid'n. 1967 mi. U. S. 460, White and Hamilton Counties;
McCalman Constr. Co., 619 Secton St., Danville, Ill. CA **$558,852,** c. conc. pavement and one culvert 2.47 mi. U. S. 150, Vermilion Co.;
Arcole Midwest Corp., 1225 Main St., Evanston, Ill., CA **$1,678,732,** c. conc. base course, c. conc. base course wid'n. and bit. surf. 25.5 mi. Ill. No. 1431; traffic control subgrade installations, Jasper and Crawford Counties;
Feigel Constr. Co., 800 E. Michigan St., Evansville, Ind., CA **$522,544,** bit. resurf. 20.02 mi. U. S. 460, White and Hamilton Counties. Grand total $5,557,-905. Bids Oct. 15. CD 10/21, under LB.

† Fred R. McKenzie & Co., 405 Bondi Bldg., Galesburg, Ill., CA, **$41,696,** construction, placing rock covered apron mattress, Lock and Dam 13, Mississippi River at Fulton, Whiteside Co., CIVENG 11-117-53-21, ILLINOIS, U. S. Eng., Clock Tower Bldg., Rock Island, Ill. Bids Oct. 8. CD 10/1.

MICHIGAN—State Hy. Dpt., 222 Townsend St., Lansing, Zone 13,
William H. Gilliland, Alpena, Mich. CA **$633,974,** est. $620,000, grading, drainage work, stabilized aggregate FH 1-16 C1 (FH 6 Sec. F C1s 2), Alcona Co. CD 10/22, under LB.

Fletcher Electric Service, Ann Arbor Mich. CA Est. $60,000. Electric work, underground electric distr. sys., transformer sub-station, ducts, manholes, etc LAPEER, MICH. State, A. N. Langius, dir. State Bldg. Dpt., Lansing, Mich. Bids Sept. 17. CD 3/29.

BUILDINGS

LOW BIDS AND CONTRACTS

▲ Anthoni Visconsi, 1010 Euclid Ave., Cleveland 14, O. Owner Builds. Approx. **$3,500,000.** 24-unit masonry SHOPPING CENTER, on 5-acre tract, Mayfield and SOM Center Rds., MAYFIELD HEIGHTS, O. CD 7/18.

▲ Huron Portland Cement Co., Ford Bldg., 601 Griswold St., Detroit 26, Mich. Own Forces. (1) install four 10x153 ft. rotary KILNS for cement clinker, each complete with waste heat boilers, clinker coolers and electrical precipitators (2) install two 9x15 ft. compeb MILLS each complete with air separator for grinding raw materials (3) install 3 Bradley-Hercules MILLS for preliminary grinding of clinkers two 8x37 ft. compeb MILLS for finish grinding of clinkers (4) build new SCALE HOUSE and install new scales for proportioning clinker and gypsum (5) constr. clinker storage and tunnel reclaiming sys. for storage of clinker with capacity of 1,500,000 bbls., ALPENA, MICH. CD 12/19/49.

▲ Sullivan-Smith, Inc., 5623 Telegraph Rd., Dearborn, Mich. Owner Builds, Est. **$1,250,000.** 115 single brick HOUSES, circular paved courts, Snow St., Southfield Rd., DEARBORN, MICH. Ragner Arnesen, Ann Arbor, Mich., archt.

North-Moller Co., Jackson, Mich. CA Est. **$90,000.** 1 story, 80x120 ft., brick, concrete WAREHOUSE, Southern Michigan State Prison, JACKSON, MICH. State, A. N. Languis, dir. State Bldg. Dpt., Lansing, Mich. Bids May 21. CD 5/1.

WEST OF MISSISSIPPI

BIDS ASKED—HEAVY CONSTRUCTION

† Wyoming—B.A. 11/13—Bureau Reclamation, Dpt. Interior, Casper, earthwork, structures, Laterals 256-55R and 256-74L, Kendrick Proj., Spec. No. 703C-285; adv. ENR 10/30. CD 9/12/44, under LB.

† N. M., Albuquerque—PARKING APRON—B.A. 11/18—U. S. Eng., P.O. 1538, aircraft parking apron for Kirtland Air Force Base, Serial No. Eng. 29-005-53-35. Approx. $550,000. CD 6/6, under LB.

† Tex., Kelly Air Force Base—ENGINE TEST FACILITIES—B.A. 11/19—U. S. Govt., c/o Air Force Contg. Officer, SAAMA, San Antonio, high horsepower conventional reciprocating engine test facilities, incl. two 84x169 ft. cells, with 36 ft. ceilings, with stacks projecting 15 ft., etc., Serial No. IFB 41-603-53-138. Approx. $100,000. Extended date. CD 9/30.

† Tex., Kelly Air Force Base—STORAGE—B.A. 11/19—U. S. Govt., c/o Contg. Officer, Kelly Air Force Base, San Antonio, gasoline storage and dispensing sys., incl. six 25,000 gal. steel underground storage tanks, Serial No. (IFB 41-608-53-16-B. $90,000. Extended date. CD 10/7.

† Tex., Abernathy — AIRFIELD — B.A. 11/20 — U. S. Govt., c/o Purch. & Contg. Officer, Reese Air Force Base, Lubbock, rehabilitation northeast-southwest runways, Abernathy Auxiliary Landing Field. Bid No. 41-620-53-19. $75,000.

† Neb., Lincoln—BACHELOR OFFICER QUARTERS—B.A. About 11/21—U. S. Eng., 1709 Jackson St., Omaha, four 2-story L-shaped wood frame 34x234x138 ft. wood frame bachelor officer quarters; 7,000 sq. yd. double bit., 8 in. base parking area; utilities, site grading, walks, seeding, etc., Lincoln Air Force Base, Inv. No. Eng. 25-066-53-53. Plans deposit $50. CD 7/17.

▲ Mo., St. Louis—B.A. 11/25—City, Frank J. McDevitt, pres. Bd. Public Service, 304 City Hall, 12 and Market Sts., Zone 3, rubbish incinerator foot of Gasconade St., incl. bldg., plumbing, drainage, heating and ventilating, electrical work, furnaces, stacks of chimneys, $1,750,000. Greeley & Hansen, 220 S.

State St., Chicago, Ill., engrs. Walter Crecelius, 301 City Hall, city engr. CD 2/20/48.

BIDS ASKED—BUILDINGS

Ark., Bald Knob—SCHOOL—B.A. 11/12—Bald Knob Special School Dist., high school. $500,000. Plans deposit $50. Bruce R. Anderson, Wallace Bldg., Little Rock, archt.

Okla., McAlester—SCHOOL—B.A. 11/18—Bd. Educ., McAlester, Second Ward Elementary School. $303,919. Harold Flood, Ardmore, archt. CD 8/1.

▲ **Okla., Oklahoma City**—SCHOOL—B.A. 11/18—Bd. Educ., 400 N. Walnut St., Douglass High School, 8th and Eastern Sts. $1,250,000. Plans deposit $100. Sorey, Hill & Sorey, 809 N.W. 36 St., archts. CD 3/31.

Minn., New Brighton—SCHOOL—B.A. 11/20—Bd. Educ., D. D. Wendt., clk., Mound View High School. $500,000. Plans deposit $25. Haxby, Bissell & Belair, 1111 Nicollet Ave., Minneapolis, archts. CD 11/23/51.

▲ **Minn., St. Paul**—NURSES HOME—B.A. 11/25—Bethesda Hospital, P. Andreen, chn. Bldg. Comn., 558 Capitol Blvd., 7 story nurses home, 540 Capitol Blvd. $1,250,000. Ellerbe & Co., E. 505 First National Bank Bldg., archts. CD 6/18/47.

▲† **Mo., Overland (St. Louis 14, P.O.)**—RECORD CENTER)—B.A. 4/3—U. S. Eng., 601 Davidson Bldg., Kansas City 8, Mo., constr., completion 6 story, story, bsmnt., 1,620,000 sq. ft. brick, rein.-con., steel Army Adjutant General's Record Center, Woodson Rd., 3 block south of Page Ave. $18,000,000-$20,000,000. Hellmuth, Yamasaki & Leinweber, International Office Bldg., 722 Chestnut St., St. Louis, Zone 1, archts. Wm. C. E. Becker, 411 N. 7 St., St. Louis, Zone 1, and John D. Falvey, 316 N. 8 St., St. Louis, Zone 1, engrs. CD 1/31/52.

SOON LETS CONTRACT—BUILDINGS

▲ **Tex., Houston**—STORE—B.A. 11/11—Battelsteins, Inc., 812 Main St., soon lets contract—store, S. Shepherd Dr. $1,000,000. Brown & Root, Inc., Box 3, engr.-archt. CD 10/8.

HEAVY CONSTRUCTION

LOW BIDS AND CONTRACTS

IOWA—State Hy. Comn., Ames,

Jack Stanley, Thurman, Ia., LB, **$82,892,** surf. ER-18 (12), Fremont Co.;

Schemmer Constr. Co., Logan, Ia., LB, **$61,653,** surf. ER-30 (8), Harrison Co. Bids Oct. 21. CD 10/9.

MISSOURI—State Hy. Comn., Jefferson City,

Henry L. Perkinson Constr. Co., 132 E. Douglas St., St. Louis, Mo. CA **$859,305.** c. conc. $.782 mi., City of St. Louis;

Koss Constr. Co., 205 Farm Bureau Bldg., Des Moines, Ia. CA **$279,786.** 24 ft. c. conc. 3.672 mi., St. Charles Co. Bids Oct. 3, awarded Oct. 21. CD 10/7 under LB.

Victory Constr. Co., 2333 Brentwood Blvd., Brentwood 17, Mo. LB **$87,807.** est. $65,000. 1 mi. 24 in. and ½ mi. 18 in. interceptor sewers, ST. ANN, MO. City, Martha Hart, clk., City Hall, 10128 St. Charles St., St. Ann 14, Mo. Bids Act. 13. CD 9/29.

Volz Constr. Co., Ripley, Tenn. LB **$793,459.** sewer lines, 6 lift stations;

Cannady Constr. Co., Monett, Mo. LB **$396,000,** sewage treatment and appurtenances, SIKESTON, MO. City, Joe Cravens, mayor, Sikeston, Mo. Bids Oct. 20. CD 9/29.

▲† **Pennington-Winter Constr. Co.,** Liberty National Bldg., Oklahoma City, Okla. LB. **$1,062,536.** rehabilitation work, Eng. 03-050-53-23, CAMP ROBINSON, ARK. U. S. Eng., 300 Broadway, Little Rock, Ark. Bids Oct. 16. CD 9/24.

▲† **Dondlinger & Sons Constr. Co.,** 1206 E. Lincoln St., Wichita, Kan. LB. **$2,343,550.** hangars and facilities, Wichita Air Force Base, Inv. 23-028-53-18, WICHITA, KAN. U. S. Eng., 601 Davidson Bldg., Kansas City 8, Mo. Bids Oct. 15. CD 9/26.

B-Line Constr. Co., 1st. Natl. Bank Bldg., Oklahoma City, Okla., CA. **$531,966.** K.V. sub-stations, Anadarko, OKLAHOMA. Western Farmers Electric Cooperative, Anadarko, Okla. Bids Aug. 26. CD 9/9, under LB.

† **Anchor Constr. Co.,** Barnes Bldg., Muskogee, Okla., LB. **$878,996.** est. $796,610, roads, drainage and utilities at Ardmore Air Force Base, ARDMORE, OKLA. U. S. Eng., Box 61, Tulsa, Okla. Bids Oct. 26. CD 9/26.

Collum & Whittle, Box 6044, Dallas, Tex. CA **$47,775,** Alt. 1, water lines, facilities; CA **$86,115,** Alt. 2, access roads; CA **$73,200,** railway spur, at Naval Ammunition Depot, MCALESTER, OKLA. Grand total $207,090. U. S. Govt., Officer in Charge of Construction, 8th Naval Dist., Bldg. 16, foot of Prytania St., New Orleans, La. CD 11/14/51, under Public Buildings.

▲ **R. H. Fulton & Co.,** Lubbock, Tex., CA. **$4,180,000,** est. $4,000,000. 127 mi. 12 in. oil line from Wichita Falls, TEXAS, to Oklahoma City, OKLAHOMA. CA. **$550,000.** 18 mi. 12 in. oil line from Perry to Tonhoma, OKLAHOMA. Continental Oil Co., Ponca City, Okla. Awarded Dec. 21. CD 9/25/51.

▲ **TEXAS**—State Hy. Comn., State Highway Bldg., Austin,

R. N. Adams, P.O. Box 376, Kaufman, Tex., LB **$93,840,** grading, structures, base and surf. Hy. FM 1830. Proj. R 1785-1-1, Denton Co.;

Bell, Braden, Barker & Gilvin, P.O. Box 2268, Amarillo, Tex., LB **$134,147,** grading structures, base and surf. Hy. FM 1929 and 294, Proj. R 788-3-1, R788-2-4, Armstrong and Carson Counties; LB **$67,472,** grading, structures, base and surf. Hy. FM 1913, Proj. R 1244-2-1, Moore Co.;

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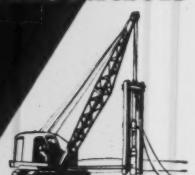

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John F. Buckner & Sons, P.O. Box 76, Cleburne, Tex., LB **$125,977**, b. conc. wid'n. and flexible, curb and gutter, Proj. C 134-4-8, Jack Co.;

Cooper & Woodruff, 222 Mays Bldg., Amarillo, Tex., LB **$133,750**, grading, structures, base and surf. Hy. FM 1166 and 680, Proj. S 1043 (1) and S 1502 (2), Hardeman Co.; LB **$121,296**, grading, structures, base and surf. Hy. FM 1046, 1443 and 227, Proj. S 1359 (1), R 1347-1-1235-2-5, Wheeler Co.;

Dodds & Wedegartner, San Benito, Tex., LB **$63,386**, flexible base and two course surf. tr. Hy. FM 1792, Proj. C 220-7-3, Cameron Co.;

E. E. Hood & Sons, Box 6097, Harlandale Station, San Antonio, Tex., LB **$187,366**, grading, structures, base and surf. Hy. FM1749 and 471, Medina, Atascosa and Bexar Counties;

John T. Leslie, 5513 E. Grand Ave., Dallas, Tex., LB **$84,605**, grading, structures, base and surf. Hy. FM 677, Proj. S 1057 (2) and R 1352-1-1, Montague Co.;

Ernest Loyd, P.O. Box 1120, Fort Worth, Tex., LB **$114,385**, grading, structures, base and surf. Hy. FM 1832 and 576, Proj. R 480-5-1, R 1031-5-1, Callahan and Shakelford Counties; LB **$174,893**, grading, structures, base and surf. Hy. FM 100 and 79, Proj. S 1797 (1) R 688-2-5 and R 174-4-5, Fannin and Lamar Counties; LB **$64,349**, grading, structures, base and surf. Hy. FM1313 and 1656, Proj. S 1800 (1), R 453-11-1 and R 1055-1-2, Lynn Co.;

McKenzie Constr. Co., P.O. Box 806, San Antonio, Tex. LB **$1,653,719**, grading, drainage structures and pavement Hy. U. S. 81, Proj. UI 1083 (5), Bexar Co.;

Holland Page, P. O. Box 1181, Austin, Tex., LB **$103,084**, grading, structures, base and surf. Hy. FM 1682, Proj. C 1694-2-1, Gonzales Co.; LB **$316,698**, grading, structures, base and surf. Hy. FM 1787, 1788, Proj. S 1794 (1) and S 1805 (1), Ector, Midland and Upton Counties; LB **$78,769**, grading, structures, base and surf. Hy. FM 1331, Proj. S 1698 (1), Williamson Co.;

J. W. Perry, 501 Insurance Bldg., San Antonio, Tex., LB **$87,599**, grading, structures, base and surf. Hy. FM 571, Proj. S 1001 (3) and R 570-1-4, Eastland Co.;

South Texas Constr. Co., P. O. Box 3536, Corpus Christi, Tex., LB **$236,219**, grading, structures, base and surf. Hy. FM 530, Proj. RV 515-4-4, R 515-4-5, Lavaca Co.;

Southern Contg. 1901 Meadowbrook Dr., Austin, Tex. LB **$107,948**. Grading, structures, base and surf. HY. FM 1465, 1895, Proj. R 748-4-5 and R 852-1-1, Frio and LaSalle Counties;

Henry Stafford, P. O. Box 1047, Lubbock, Tex., LB **$104,202**, grading, structures, base and surf. Hy. FM 1471 and 1831, Proj. S 1563 (1) and R 1792-1-1, Crosby Co.;

Stone Constr., P. O. Box 861, Ardmore, Tex., LB **$61,938**, grading, structures, base and surf. Hy. FM 604, Proj. S 1610 (1), Taylor Co.;

Texas Bitulithic, P. O. Box 5297, Dallas, Tex. LB **$394,047**, c. conc. pavement Hy. SH 550, Proj. UI 1082 (6), Tarrant Co. Bids Oct. 21. CD 10/3, 10/9, 10/12.

Tennessee Gas Transmission Co., Commerce Bldg., Houston, Tex., Force Account. **$65,000**, laying some gas lines, in Carthage Field, Carthage area, Panola Co., TEXAS. CD 9/15.

Fred Patterson, The Builder, Pasadena, Tex., CA Approx. **$40,000**. Earthen lake, KATY, TEX. Fred Patterson, Pasadena, Tex.

BUILDINGS

LOW BIDS AND CONTRACTS

▲ **Ditmars-Dickman-Pickens Constr. Co.**, 115 W. 7 St., Little Rock, Ark. and **W. S. Bellows Constr. Co.**, 716 N. Everton St., Houston, Tex., CA, Approx. **$30,000,000** aluminum reducation PLANT (Robert P. Patterson plant), GUM SPRINGS, ARK. Reynolds Metals Co., 3 and Grace Sts., Richmond, Va. Bids Oct. 13. CD 10/7.

▲† **Farnsworth & Chambers**, P.O. Box 74, Houston, Tex. CA **$3,700,000**. 70 high explosive MAGAZINES, etc., at Naval Ammunition Depot, Spec. 34748, SHUMAKER, ARK. Dist. P. Wks. Office, U. S. Naval Station New Orleans, La. CD 10/8, under LB.

Milner & Putney, Bethany, Okla., CA **$344,777**. John Marshall HIGH SCHOOL addn., OKLAHOMA CITY, OKLA. Bd. Educ., 400 N. Walnut St., Oklahoma City, Okla. Noftsger & Lawrence, 2756 N. W. 23 St., Oklahoma City, Okla., archts. Bids Oct. 20, awarded Oct. 21.

▲ **E. E. Cloer**, Box 927, Fort Worth, Tex., LB **$2,654,834** est. $2,650,000. construct, manage, finance 340 HOUSING units, CORPUS CHRISTI, TEX. U. S. Govt., Dist. P. Wks. Office, Civil Engineer, 8th Naval Dist., Bldg. 16, New Orleans, La. Bids Oct. 22. CD 9/24.

Nu-Mode Sur-Face, Inc., 1001 Camp St., Dallas, Tex., CA **$890,000**. 125-250 HOUSING units, GREENVILLE, TEX. Howard Homes, Inc., F. Buck Howard, pres., 1430 Life America Bldg., Dallas, Tex. CD 3/5.

M. R. Aldrich Co., Pasadena, Tex., CA **$309,000**. HOUSING in various areas, HOUSTON, TEX. W. R. King, 4027 Underwood St., Houston, Tex. CD 10/9.

FAR WEST

BIDS ASKED—HEAVY CONSTRUCTION

† **Washington**—TURBINES, etc.—B.A. 11/13—Bureau Reclamation, Dpt. Interior, Bldg. 53, Denver Federal Center, Denver, Colo., hydraulic turbines and hydraulic-turbine-driven pumping units for Chandler Power and Pumping Plant, Kennewick Div., Yakima Proj. DS-3805. L. N. McClellan, ch. engr. CD 10/15.

† **Arizona**—B.A. 12/2—Bureau Reclamation, Dpt. Interior, Bldg. 53, Denver Federal Center, Denver, Colo., furnishing 2 vertical shaft centrifugal or mixed-flow pumps, each with capacity of 217 c.f.s. under a head of 32.5 ft., 2 vertical shaft, centrifugal pumps, each with capacity of 240 c.f.s. under a head of 87 ft., vertical shaft centrifugal or mixed flow pump with capacity of 225 c.f.s. under a head of 57 ft., Wellton-Mohawk Division, Gila Proj. Spec. DS 3829; adv. ENR 11/6. CD 9/21/44.

SOON LETS CONTRACT—BUILDINGS

Calif., Monterey — NEWSPAPER — Monterey Peninsula Herald, 498 Washington St., soon lets contract, partially 2 story, rein.-con. concrete block, newspaper bldg., Pacific and Jefferson Sts., Friendly Palza. Wurster, Bernardi & Emmons, 402 Jackson St., San Francisco, archts. CD 3/6/51.

HEAVY CONSTRUCTION

LOW BIDS AND CONTRACTS

▲ **Salt Lake County Conservancy Dist.**, c/o County Comn., City and County Bldg., Salt Lake City, Utah, cancelled bids to have been opened Oct. 20, sanitary sewerage sys. throughout district and sewage treatment plant, SALT LAKE CITY, UTAH. Est. **$6,000,000**. CD 9/19.

California—State Div. Hys., P. Wks. Bldg., Sacramento, **Ukropina-Polich-Kral**, 201 E. Las Tunas St., San Gabriel, Calif., LB, **$388,580**, 2 rein.-con. bridges and 0.34 mi. approaches on San Gabriel River on S.P.R. tracks, Washington Blvd., 2.5 mi. west of Whittier, Los Angeles Co. Bids Oct. 16. CD 9/24.

† **I. R. A. Wattson Co.**, Box 747, North Hollywood, Calif., LB, **$432,278**, Schedule 1;

G. L. Tarlton Contg. Corp., 5505 Dale Ave., St. Louis, Mo., LB, **$412,655**, Schedule 2;

Norman I. Fadel & N. M. Saliba, 7101 N. Radford St., North Hollywood, Calif., LB, **$56,500** Schedule 3, 2,900 ft. 6 or 7 ft. diam. concrete lined Horseshoe Camp Creek Tunnel and access road between Camp Creek Diversion Dam and Sly Park Reservoir, Central Valley Proj. Spec. Spec. 4806, CALIFORNIA. Bureau Reclamation, Dpt. Interior, Folsom, Calif. Bids Oct. 16. CD 9/22.

† **P. J. Artukovich & M. Miller Co.**, 13305 S. San Pedro St., Los Angeles, Calif., LB, **$671,380**, steel siphon and structures, San Luis Rey River Crossing, N. Sta. 1901 to 1968 plus 15 San Diego Proj. near Fallbrook, Spec. DC 3807, CALIFORNIA. Bureau Reclamation, Dpt. Interior, Eleventh Naval Dist., 1220 Pacific Hy., San Diego, Calif. Bids Oct. 16. CD 9/30.

† **Walker Drilling Co.**, 79 Orchard Lane, Salinas, Calif., LB, **$47,772** Option A, drilling, casing, gravel pack, developing, removing sand, clean and test pumps in 4 supply wells, Marine Corps Training Center, Spec. 35103, TWENTYNINE PALMS, CALIF. Eleventh Naval Dist., P. Wks. Office, San Diego, Calif.

BUILDINGS

LOW BIDS AND CONTRACTS

▲ **Robert E. McKee Co.**, 4701 San Fernando Rd., Los Angeles, Calif., LB, **$7,057,000**, 141 structures of Imperial Compton Public HOUSING, LOS ANGELES, CALIF. Housing Auth. of City of Los Angeles, 1401 E. First St., Los Angeles, Calif. Bids Oct. 21. CD 9/29.

Harris Constr. Co., P.O. Box 109, Fresno, Calif., CA, **$406,901**, James Monroe SCHOOL and Sierra Vista SCHOOL, MADERA, CALIF. Maderan Elementary School Dist., 727 E. 6 St., Madera, Calif. Bids Oct. 16, awarded Oct. 17. CD 10/3.

CANADA

SOON LETS CONTRACT—BUILDINGS

Ont., Toronto—GARAGE, etc.—Levy Auto Parts Co. Ltd., 1400 Weston Rd., soon lets contract 1 story, 82x243 ft., steel garage, warehouse with small offices on mezzanine. $175,000. Wilson & Newton, 1104 Bay St., archts.

HEAVY CONSTRUCTION

LOW BIDS AND CONTRACTS

▲ **Poole Constr. Co. Ltd.**, 10503 109 St., Edmonton, Alta., and **Bennett & White of Edmonton, Ltd.**, 11239 83 St., Edmonton, Alta., CA. **$4,500,000**, 335x424 ft. cantilever hangar, at Royal Canadian Air Force Base, COLD LAKE, ALTA. Defence Constr. Ltd., Kensington Bldg., Winnipeg, Man. Bids Sept. 3. CD 8/8.

Preload Co. of Canada Ltd., St. James St., Montreal, Que., CA. **$90,675**, cement lining of 3 water mains two of 51 in. diam. and one of 42 in. diam., OTTAWA, ONT. Municipality, City Hall, Ottawa, Ont. CD 8/24/49.

Yearley & Reed Ltd., 301 Cedarvale Ave., Toronto, Ont., CA. **$74,857**, 3,300 ft. 15- to 39-in. relief sewers in Mortimer Ave. and Plains Rd., TORONTO, ONT. East York Twp., Coxwell and Mortimer Aves., Toronto, Ont. Proctor, Redfern & Laughlin, 11 Jordan St., Toronto, Ont., engrs. Awarded Oct. 21.

Malvern Constr. Co. Ltd., 490 Dawes Rd., Toronto, Ont., CA. **$103,000** trunk sewer in Danforth Rd. and Summer Dr., TORONTO, ONT. Scarborough Twp., 2001 Eglinton Ave. E. Toronto, Ont. Proctor, Redfern & Laughlin, 11 Jordan St., Toronto, engrs. E. M. Baird, c/o owner, twp. engr. Awarded Oct. 22. CD 8/28.

BUILDINGS

LOW BIDS AND CONTRACTS

Smith Bros. Constr. Ltd., 1740 Ellen St., Niagara Falls, Ont., CA. **$100,000**, 1 story, 40x262 ft., rein.-con., brick FREIGHT SHED and OFFICES, NIAGARA FALLS, ONT. Canadian National Rys., K. Huffman, ch. engr., 436 Union Station, Toronto, Ont. Awarded Oct. 21. CD 5/21.

Proposed Projects

WATER SUPPLY

Mich., Port Huron—Port Huron twp., Clarence Limberg, supt., water sys., incl. water supply and combined filtration plant, pumping station, capacity 1.6 m.g. per day, $750,000. CD 11/21/44.

Mich., Saginaw—Saginaw-Midland Water Bd., Saginaw, pumping station for Port Huron Saginaw-Midland water line, $900,000, Francis Eng. Co., 303 Eddy Bldg., consult. engr.

▲ **Minn., St. Louis Park**—Village, J. Justad, clk., $1,650,000 bond election Nov. 4, water treatment plant, 2 m.g. underground reservoir, G. M. Orr Eng. Co., 1004 Marquette Ave., Minneapolis, consult. engr. CD 8/20.

O., Cleveland—City, City Hall, Zone 14, 2 m.g. water reservoir, Independence, $436,000. Frank J. Schwemler, City Hall, comr. Utilities Engineering.

▲ **O., Youngstown**—Mahoning Valley Sanitary Dist., Box 298, Zone 1, sand filters, plant imprvs., $1,200,000; low lift pump, $60,000; pipe line and pumping station for auxiliary supply from Berlin Reservoir, $2,740,000. CD 10/12/49, under O. Berlin.

O., Youngstown—City, Boardman and Phelps Sts., WW imprvs., increase pumping facilities at Myrtle Ave. Station to Indianola Ave. standpipe from 16 m.g.d. to 24 m.g.d. to imprv. water pressure to Boardman Twp. $525,000. James C. Ryan, City engr.

† **Alaska, Kodiak**—Dpt. Interior, Alaska P. Wks., Juneau, exten. water sys. $450,000.

Ont., Kingston—City, City Hall, water and sewage facilities for Barriefield Military Camp. $750,000. Gore & Storrie, 1130 Bay St., Toronto, consult. engrs.

SEWERS, WASTE DISPOSAL

Calif., Castro Valley—Castro Valley Sanitary Dist., 2040 Marshall St., voted $950,000 bonds, sewers, outfall sewers and appurtenances. CD 8/20.

▲ **New Jersey**—Middlesex County Sewerage Auth., New Brunswick, trunk sewer from Bound Brook to Raritan Bay to serve 12 communities; main trunk sewer, $8,950,000; interceptor at South River, $890,000; main pumping station, $990,000; connections to contributors, $830,000; treatment plant, $4,250,000; outfall, $4,100,000. Total cost $20,010,000. Metcalf & Eddy, 1300 Statler Bldg., Boston, Mass., consult. engrs.

▲ **O., Dayton**—Comrs. Montgomery Co. Court House, sewer line in Shiloh Sanitary Sewer Dist., 7,200 ft. 36 in. interceptor sewer trunk line along Stillwater River into Dayton lines, $700,000-$1,000,000; sewerage sys. in Drexel Sanitary Sewer Dist. covering approx. 946 acres bounded by Hoover Ave., corporate limits, Third St. and Holler Rd.; piping water from Dayton to Drexel area, laying of sanitary sewers and sewers themselves, $427,747. Earl Riber, co. sanitary engr.

▲ **Va., Petersburg**—City, City Hall, sewage treatment plant, pumping station and force main, $2,000,000. Wiley & Wilson, 905 Peoples Bank Bldg., Lynchburg, consult. engrs. Whitworth Cotten, c/o owner, city engr. CD 5/24/51.

Alta., Edmonton—City, Municipal Bldg., voted bonds, city's incinerator addn. $550,000. CD 4/3/50.

BRIDGES

O., Youngstown—Comrs. Mahoning Co., Court House, reconstruct Market St. Bridge, $800,000. Robert J. Schomer, 5341 Old Oxford Lane, consult. engr. Samuel Gould, Jr., Court House, co. engr. CD 9/5.

▲ **Tex., Sherman**—City, underpass (5 railways entering Sherman will participate in cost). $1,000,000. Freese & Nichols, 407 Danciger Bldg., Fort Worth, consult. engrs. CD 6/25.

Ont., Fort Erie—Welland Co., Raymond Barrick, clk.-treas., Welland, bridge and hy. widening over deep railway cuts on Central Ave. $550,000. C. R. Hagey, Fort Erie, consult. engr. CD 4/23/45.

STREETS AND ROADS

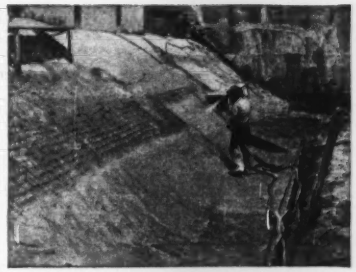
† **Idaho**—Bureau Reclamation, Dpt. Interior, Bldg. 53, Denver Federal Center, Denver, Colo., constr. part of relocated Idaho State Hy. 29, Palisades Proj., approx. 62 mi. southeast of Idaho Falls Idaho and consists of grading, structures for about 5½ miles of hy. from Big Elk Fill to Indian Creek, Palisades Proj. Prospective bidders are invited to inspect the site in immediate future in order that they may be informed and in position to submit a bid when work is advertised.

▲ **Alaska, Anchorage**—City, City Hall, voted bonds, paving streets. $2,000,000. CD 10/8.

▲ **Alta., Edmonton**—City, Municipal Bldg., three paving programs for 1953. $1,250,000. CD 10/26/51.

EARTHWORK, WATERWAYS

▲ **Calif., Los Angeles**—Los Angeles County Flood Control Dist., 751 S. Figueroa St., $114,000,000 bond elec-



DAM REBUILT WITH "GUNITE"

This is Lower Doughty Pond Dam belonging to the Atlantic City, New Jersey, Water Department, a poured concrete structure with fresh water upstream and tide water at the downstream toe. This structure became seriously disintegrated and eroded as shown in the upper photo, and was completely restored with "GUNITE" a minimum of six inches in thickness with double mesh reinforcement.

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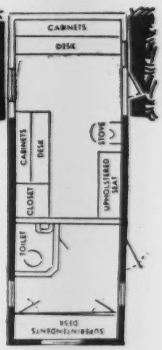

tion Nov. 4, flood control projects. H. E. Hedger, c/o owner, engr. (Correction—cost). CD 10/16.

▲ **New Hampshire**—New England Power Co., Stuart and Dartmouth Sts., Boston, Mass., dam project, hydro-electric on Connecticut River by Connecticut River Power Co. $50,000,000. Charles T. Main Co., 80 Federal St., Boston, Mass., consult. engr. CD 2/14/51.

▲† **Oklahoma**—U. S. Eng., Box 61, Tulsa, Zone 2, floodway from Spencer to N. E. 23 Sts., North Canadian River at Oklahoma City, Oklahoma Co. $3,000,000. CD 4/19/45.

† **Wis., Milwaukee**—U. S. Eng., 428 Federal Bldg., Zone 1, reconstruct Sects. K and J, 1,032 ft. south harbor pier, $1,000,000.

▲† **Wis., Sturgeon Bay**—U. S. Eng., 428 Federal Bldg., Milwaukee, Zone 1, reconstruct 700 ft. timber revetment. $1,000,000.

AIRPORTS

▲† **Pa., Pittsburgh**—PARACHUTE, etc.—U. S. Eng., 121 N. Broad St., Phila., plans by Hunting, Larsen & Dunnells, Centural Bldg., parachute bldg., dinghy shop, storage igloos, warehouse Greater Pittsburgh Airport, Moon Twp. $1,000,000. CD 9/28/51.

† **Va., Gravelly Point**—INFIRMARY—U. S. Eng., 1st and Douglas Sts. N. W. Wash., D. C., infirmary at Washington National Airport. $100,000-$500,000.

Ont., **Kingston**—AIRFIELD EXPANSION—Dpt. Transport, Hunter Bldg., Ottawa, expansion of Norman Rogers Airfield for use of larger type commercial planes on regular inter-city scheduled flights, $500,000.

LATIN AMERICA

Chile, **Santiago**—The Pfize Co. of U. S. A., Santiago, plans plant for preparation of antibiotics. $500,000.

Colombia, **Bogota**—Sears Roebuck Co., W. Arthington and S. Homan Sts., Chicago, Ill., plans department store in Bogota and one in Cali. $500,000.

Colombia, **Medellin**—Reynolds Metal Co. of U.S.A. and Gogota, Colombia, plans plant for lamination of aluminum. 5,000,000 Pesos.

Mexico, **Celaya**—Empacadora de Bajio, Angel Leo Socorro, pres., domicilio conocido, Celaya, Gto., plans vegetable cannery. $600,000.

▲ **Mexico, Mexico City**—Young Mens Christian Assoc., Balderas, 79, Mexico City, plans headquarters bldg. $1,300,000.

PUBLIC BUILDINGS

Calif., Long Beach—SCHOOL—Long Beach City School Dist, 715 Locust Ave, plans by Francis J. Hensel, 730 E. 3 St., Benjamin F. Tucker School, $530,680. CD 11/16/50.

Calif., Menlo Park—SCHOOLS—Menlo Park Elementary School Dist., 1300 El Camino Real, Menlo Park voted $585,000 bonds, Encinal, Hillview and Oak Knoll Schools, new school at Stanford Village. CD 9/3.

▲ **Colo., Golden**—SCHOOLS—Jefferson County School Dist. R-1, 11 and Jackson Sts., voted $10,000,000 bonds 15 grade schools and 4 high schools. CD 9/16.

Colo., Leadville—SCHOOL, etc.—School District 2 Lake County, Leadville, Junior High School addn., grade school, $699,000. Atchison & Kloverstrom, 1254 Monaco Parkway, Denver, consult. engrs. and archts.

▲† **Conn., Groton**—HOUSING—Public Housing Admin., 141 Milk St., Boston, Mass., temporary housing Fort Hills Home, $2,000,000. Hurley Capacefalo & Assoc., 45 Elm St., Winsted, consult. engrs.

▲ **Conn., Wallingford**—SCHOOL—Town School Dpt., Town Hall, plans by Chas. A. Maguire & Assoc., 1015 Turks Head Bldg., Providence, R. I., brick, steel, concrete high school, South Elm St. $2,500,000. CD 12/27/51.

▲ **Del., Wilmington**—PARKING—Wilmington Parking Auth., 10 and King Sts., auto parking building. $1,600,000. Parsons, Brinckerhoff, Hall & Macdonald, 51 Broadway, New York, N. Y., consult. engrs.

Ga., Lafayette—HOUSING—Lafayette Housing Auth., Lafayette, plans by Poundstone, Ayers & Godwin, Bona Allen Bld., Atlanta, 80 housing units, $550,000.

▲ **Ill., Lake Forest**—SCHOOL—School Dist. 67, 400 E. Illinois St., plans by Childs & Smith, 20 N. Wacker Dr., Chicago, Zone 6, brick, stone Jones Pasture Grade School, incl. swimming pool, gymnasium, athletic field, Deerpath Rd. near Route 41. $1,300,000. McFadzean, Everly & Assocs., 875 Green Bay Rd., Winnetka, engrs. for landscaping.

▲ **Ill., Wheaton**—SCHOOL—School District 95, 504 Naperville Rd., plans by Perkins & Will, 309 Jackson Blvd., Chicago, Zone 6, community high school, $2,500,000. 6/28/51.

▲ **Ind., Crawfordsville**—LIGHT PLANT—City, Municipal Light Plant, 11,500 kw generator, new boiler brick, steel plant addn., new equipment, $2,232,718.

▲ **Ind., Evansville**—HOSPITAL—Bd. Comrs. Vanderburgh Co., Earl Resor, pres., Court House, tuberculosis hospital addn., Boehne Memorial County Hospital, $1,800,000.

Ia., Independence—SCHOOL—Bd. of Educ., Independence, plans by Dougher, Rich & Woodburn, 302 Garver Bldg., Des Moines, school, $500,000. CD 6/19/50.

Kan., Wichita—FINE ARTS CENTER—University of Wichita, 1845 Fairmount St., plans by Forsblom & Parks, Beacon Bldg., fine arts center. $800,000.

▲ **La., Minden**—SCHOOLS—Webster Parish School Bd., Minden, plans by Neild-Somdal Assoc., Jordon St., Shreveport, Minden High School, $500,000, Webster High School, $500,000. CD 2/6/52.

Mass., Amherst—ENGINEERING—State University of Mass., Amherst, plans by Appleton & Stearns, 53 State St., Boston, 2 story, bsmnt., brick, limestone central engineering bldg. wing, U-101, $850,000, Congdon, Gurney & Towle, Inc., 53 State St., Boston, struct. engr., Thompson Eng. Co., 177 State St., Boston, elec. engr.; plans by Louis W. Ross, 131 State St., Boston, imprv. fram and dairy bldgs., U-502, $82,000. CD 1/26/51.

Mass., Framingham—SCHOOL—Town, School Bldg. Comn., plans by Kilham, Hopkins, Greeley & Brodie, 9 Arlington St., Boston, Junior High School, Saxonville. $500,000.

Mass., Monson—INFIRMARY—State, Dpt. Mental Health, 15 Ashburton Pl., Boston, M-507 Infirmary incl. furnishings, equipment, State Hospital. $660,000.

Mich., Mount Clements—JAIL—Bd. Supervs. Macomb Co., plans by Harley, Ellington & Day, 153 E. Elizabeth St., Detroit, brick, steel jail. $950,000. CD 3/13/51.

Mich., Holland—RECREATION—City, Clarence Grevengood, clk., bond election Nov. 4, brick, steel, concrete recreation bldg. incl. gymnasium, auditorium, exhibit rooms, etc. $500,000. Louis C. Kingscott & Assoc., 511 Monroe St., Kalamazoo, archts. CD 9/6/46.

Mich., South Haven—SCHOOL—City, Bd. Educ., South Haven, 2 story, brick, steel elementary school, $600,000.

▲ **Minn., Anoka**—SCHOOL—Bd. Educ., J. Wennerlund, clk., voted $2,250,000 bonds Oct. 14, high school, $1,000,000, 2 new grade schools, $300,000 each, 2 grade school addns., etc. Toltz, King & Day, 1509 Pioneer Bldg., St. Paul, archts. CD 9/10.

▲ **Minn., White Bear Lake**—SCHOOLS—Bd. Educ., F. D. Melhorn, clk., voted $1,250,000 bonds, schools, and sites, Toltz, King & Day, 1509 Pioneer Bldg., St. Paul, archts.

Minn., Windom—SCHOOL—Bd. Educ., Mrs. Inez F. Hoyer, clk., bond election Oct. 29, grade school $800,000, H. H. Swanson, 500 Sexton Bldg., Minneapolis, archt. CD 1/25/46.

▲ **Neb., Omaha**—BUILDING—Bd. Regents, University of Nebraska, Lincoln, new building, Unit 3, to rear of

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present bldgs. at University of Nebraska Medical College and Hospital, for 220-addnl. beds, training facilities for students and admin. offices. $5,200,000.

N. C., Marion—HIGH SCHOOL—City plans by Lindsey M. Gudger, 52 Carter Ave., Asheville, high school. $500,000.

O., Brookville—HIGH SCHOOL—Bd. Educ., Robert Warnke, supt., Brookville, plans by Walker Norwick & Assoc., 12 W. Monument St., Dayton, high school. $400,000-$500,000. CD 8/1.

▲ **O., Kent**—DORMITORY—Kent State University, Kent, dormitory, $2,000,000.

▲ **Pa., Clearfield**—SCHOOL—Clearfield Area Joint School Dist., Clearfield, plans by Hunter Caldwell & Campbell, 3601 5 Ave., Altoona, Senior High School. $1,500,000.

▲† **Pa., Marietta**—ADMINISTRATION—U. S. Eng., 24 St. and Maryland Ave., Baltimore, Md., plans by Pepper Assoc., engrs.-archts., 225 S 15 St., Phila., administration bldg. $1,500,000.

Pa., Monongahela—SCHOOL—School Dist. of Carroll Twp., Monongahela, plans by C. C. and E. E. Compton, 419 Thompson St., Donora, Junior High and Grade School, Carroll Twp. $750,000.

S. C., Charleston—SCHOOL—City, City Hall, plans by Simons & Lapham, 17 Broad St., Memminger Elementary School. $500,000.

▲ **Tex., Dallas**—SCHOOLS—Dallas Independent School Dist., 3700 Ross St., defeated bonds Oct. 18, No. 1 Elementary School, Preston Hollow, north of Northwest Hy., $675,000; Elementary School No. 2 in Public Housing area, $650,000; Elementary School No. 3 in Public Housing area, $600,000; Elementary School No. 4 in Public Housing area, $950,000. CD 10/1.

▲ **Tex., Dallas**—SCHOOLS—Dallas Independent School Dist., 3700 Ross St., voted bonds Oct. 18, elementary school, Idaho and Exeter Sts. in Oak Cliff, $750,000; Elementary School No. 1, in southwest Oak Cliff, $725,000; Elementary School No. 2, in southwest Oak Cliff, $750,000; Junior-High School, southwest Oak Cliff, $1,500,000; Junior-High School, southeast of Lisbon, $1,500,000; playgrounds and recreational facilities for schools in southwest Oak Cliff, $75,000; school heating plants, $930,000.

▲ **Tex., Dallas**—SCHOOLS—Dallas Independent School Dist., 3700 Ross St., voted bonds Oct. 18, No. 2 Elementary School, Walnut Hill, north of Northwest Hy., $775,000; Junior-High School, Hillcrest area, $1,350,000; Hillcrest High School addn., $375,000; Elementary School No. 1, $550,000; Elementary School No. 2, $650,000; Elementary School No. 3, $750,000; Elementary School No. 4, $750,000; Elementary School No. 5, $600,000; Elementary School No. 6, $700,000; Physical Educational Plants at Sunset School, $350,000; at W. H. Adams School, $450,000; at North Dallas High School, $375,000; at Woodrow Wilson School, $325,000; at N. R. Crozier Technical School, $300,000; administration and warehouse addns., $375,000; Junior-High School, Pleasant Mound area, $1,500,000; Elementary School, Pleasant Mound area, $850,000; Elementary School No. 1, in Public Housing area, $750,000; Elementary School No. 1 in Northeast Dallas, $550,000; Elementary School No. 2, in Northeast Dallas, $800,000; Elementary School, Lovers Lane, Abrams Rd., $775,000; Elementary School, Northeast Dallas at Victor H. Hexter, $700,000. CD 10/1.

▲ **Tex., Galveston**—DORMITORY, etc.—University of Texas, Bd. Regents, administration Bldg., Austin, dormitory and 30-unit apartment for Women Medical students and married residents and interns, $420,000; 3 story dormitory unit for 108 residents and interns, $510,000 2 dormitory units for 72 student nurses $340,000, for Galveston Medical Branch. CD 11/20/46.

Tex., Longview—HIGH SCHOOL—Longview Independent School Dist., Longview, combined high school and city auditorium, $500,000. CD 8/21/51.

▲ **Tex., Marshall**—SCHOOLS—Marshall Independent School Dist., c/o V. H. Hackney, supt., Marshall, plans by Preston M. Geren, 1607 Fort Worth Natl. Bank Bldg., Fort Worth, school imprv. program, incl. several new bldgs. $1,750,000. CD 9/19.

▲† **Va., Little Creek**—SCHOOL—P. Wks. Office, Fifth Naval Dist., U. S. Naval Base, Norfolk, plans by Clark & Buhr, Midtown Bldg., Wards Corner, Norfolk, 3 story, concrete Amphibious training School Bldg., Little Creek Amphibious Base. $3,000,000. CD 8/18.

▲ **Utah, Provo**—MEDICAL and SURGICAL—State Bldg. Bd., State Capitol, Salt Lake City, plans by Paul S. Hodgson 829 Eccles Bldg., Ogden, medical and surgical bldg. at Utah State Hospital. $1,228,000.

▲† **Va., Fort Eustis**—BUILDINGS—U. S. Eng., foot of Front St., Norfolk, plans by Mills & Petticord & Mills, 3308 14 St. N.W., Wash., D. C., shop area classroom bldg., $160,000; shop headquarters and admin. bldg., $117,000; 2 warehouses, $630,000; motor repair shop at Highway Unit Training Center, $396,000; administration and operations bldg. with control tower, $200,000; warehouse, $75,000; hangar and shop, $800,000; coal yard and highway, $700,000; lighting, $78,000; exten. electrical distr. sys., $205,000; access road to warehouse, $146,000; access road to school shop area, $25,000; facilities for highway Unit Training Center, hardstand, $72,000; gasoline station, $24,000; 12 wash platforms, $23,000; 8 grease racks, $29,000; 3 oil and grease storage bldgs., $10,000; command and training tower, $6,000; hardstand, $125,000; helicopter landing pad, $222,000, for Transportation Corps.

Wis., Chippewa Falls—SCHOOL—Bd. Educ., Chippewa Falls, Junior High School remodeling, addn. $550,000. CD 10/31/51.

Wis., Seymour—SCHOOL—Seymour Union High School District, high school. $640,000.

▲ **Alaska, Juneau**—SCHOOL—School Bd., voted $2,000,000 bonds, school.

▲ **Alta., Edmonton**—HOSPITAL—City, Dr. D. R. Easton, supt. Hospital, plans by Rule, Wynn & Rule, 11422 Jasper Ave., completion and equipment of hospital addn., (maternity wing), Royal Alexandra Hospital, Kingsway and 111 Ave., $835,000. CD 11/10/50.

Ont., St. Thomas—SCHOOL—Bd. Educ., Mrs. D. McLachlin, secy., St. Thomas, plans by Charles H. Gillin, 284 Dundas St., London, brick, steel, concrete high school, $800,000.

▲ **Que., Montreal**—CLINIC, etc.—Province of Quebec, Dpt. Health, Quebec City, anti-tuberculosis vaccine clinic and 100-bed hospital, $3,000,000. Dpt. P. Wks., Quebec City, Que., engr.

▲ **Que., Verdun**—SCHOOL—Catholic School Bd., J. L. Trudeau, chn., Verdun, Central Superior School near Champlain Blvd. $1,000,000-$2,000,000.

COMMERCIAL BUILDINGS

Calif., San Fernando—DWELLINGS—Malouf-Franz Co., 1320 San Fernando Rd., Burbank, plans by Marvin C. Johnson, 5159 Cahuenga Blvd., North Hollywood, 58 frame, stucco dwellings in Tract 17661. $500,000.

▲ **D. C., Wash.**—APARTMENT UNITS—Winchester Cooperative Corp., Inc., 911 15 St. N.W., plans by Shapiro Inc., 911 15 St. N.W., apartment units, Adams Mill Rd. near Calvert St. $15,000,000.

▲ **Ky., Louisville**—RESIDENCES—Robert Adelberg Co., 436 S. 5 St., 320 residences. $2,000,000.

Mich., Detroit—CLASSROOM—Lawrence Institute of Technology, 15100 Woodward St., plans by Earl Pellerin, 15100 Woodward St., Zone 3, 60,000 sq. ft. brick, masonry classroom bldg. at site Northwestern Hy. at 10 Mile Rd., Southfield, $750,000. CD 10/26/51.

N. Y., New York—APARTMENT—Cambridge Realty Corp., 475 Fifth Ave., plans by Lawrence M. Rothman, 332 E. 149 St., Zone 51, 6 story apartment, 236 St., from Oxford to Cambridge Aves. $850,000.

▲ **N. Y., New York**—OFFICE—Carlton Importing Co., c/o I. Schaeffer Co., 1440 Broadway, New York, Zone 36, office bldg. addn., 19 Rector St. $1,000,000. (Correction—address). CD 9/23.

N. Y., New York—BUILDING ALTERATIONS—Columbia Broadcasting System, 485 Madison Ave., Zone 22, plans by George McLaughlin, c/o owner, altering bldg. at 517-45 W. 56 St. $500,000.

▲ **N. Y., New York**—OFFICE—Francis J. Kleban, 32 E. 37 St., Zone 16, plans by Emery Roth & Sons, 18 E. 48 St., Zone 17, 15 story office, 720 Fifth Ave. $1,250,000.

N. Y., New York—APARTMENT—Sager Constr. Corp., 750 Grand Concourse, Zone 51, plans by Charles E. Greenberg, 565 Fifth Ave., Zone 17, 2 story apartment, 231 St. and Fairfield Ave. $500,000.

N. Y., Patchogue—HOSPITAL—Brookhaven Memorial Hospital, Patchogue, 80-bed hospital in north sect. of East Patchogue near East Lake. $500,000.

▲ **O., Columbus**—SHOPPING CENTER—Don M. Casto & Son, 42 S. Fourth St., plans by C. Melvin Frank, 43 W. Long St., Northern Lights Shopping Center, Cleveland Ave. north of Linden Sect. $10,000,000. Jennings-Lawrence Co., 12 N. Third St., engr. CD 11/27/51.

▲ **O., Greenhills (Br. Cincinnati)**—HOUSING—Cincinnati Community Development Co., Burnet Ave., Cincinnati, development of North Greenhills area, approx. 3,400 acres to house approx. 7,500 families. $100,000,000. Alfred LeFerber & Assoc., Woodburn Ave., and Edward Larson, 2nd Natl. Bank Bldg., Cincinnati, consult. engrs.

▲ **Pa., Phila.**—ORPHANAGE, etc.—St. Basil's Academy, 710 Fox Chase Rd., plans by Gilboy & O'Malley, 3 N. 13 St., orphanage, first unit, $500,000; orphanage, second unit, incl. convent, chapel school, utility and boiler bldg. and laundry. $2,500,000.

▲ **Pa., Pottstown**—HOSPITAL, etc.—Pottstown Hospital, Pottstown, plans by Vincent G. Kling, 917 Corinthian Ave., Phila., hospital and nurses home addn. $2,050,252. CD 3/10/50.

▲ **Tex., San Antonio**—BANK—Federal Reserve Bank, c/o W. E. Eagle, c/o San Antonio Branch, H. P. Drought, chn. Bd. Directors, 127 Navarro St., plans by Phelps & DeWees & Simmons, 1501-6 Majestic Bldg., 75,000 sq. ft. Federal Reserve Bank Bldg. bounded by Nueva, Main, Stumberg and Dwyer Sts. $2,000,000. CD 7/15.

Va., Arlington—NURSES HOME—Arlington Hospital Assn., Inc., 5129 16th St. N., nurses home. $700,000.

Wash., Clarkston—HOSPITAL—Asotin Co. Memorial Hospital Assn., Clarkston, plans by Roald, Schmeer & Harrington, 1104 Portland Trust Bldg., Portland, Ore., 1 story hospital, $750,000. CD 10/7.

Wash., Tacoma—OFFICE—United Pacific Insurance Co., Medical Arts Bldg., plans by John Graham & Co., Dexter Horton Bldg., Seattle, Zone 4, 4 story, bsmnt., rein.-con., office addn. $500,000.

▲ **Que., Montreal**—SHOPPING CENTER—Maxwell Cummings & Sons, 1310 Sherbrooke St. W., shopping center, Pie IX Blvd. and Jean Talon St., incl. 25 retail stores, parking space, etc. $2,500,000.

INDUSTRIAL BUILDINGS

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Wilmington, chemical plants expansion. **$15,000,000.** H. M. Gordon, c/o owner, dir. Constr. Div.

▲ **Del., Wilmington**—LABORATORY—E. I. du Pont de Nemours & Co., Inc., du Pont Bldg., textile fibre and weaving laboratory. **$2,000,000.** H. M. Gordon, c/o owner, dir. Constr. Div. CD 9/10.

▲ **Ia., Des Moines**—PLANT—Armstrong Rubber Mfg. Co., Frederick Machlin, pres., West Haven, Conn., plant addn. **$2,500,000.**

▲ **Kan., Wichita**—TERMINAL GRAIN STORAGE ELEVATOR—Builders, Inc., c/o Duncan, 352 N. Broadway, 5,000,000 bu. rein.-con. terminal grain storage elevator. **$2,930,000.**

N. Y., New York—DISPLAY, SALES, etc.—Franklin Stores Corp., 519 Eighth Ave., plans by Emery Roth & Sons, 18 E. 48 St., Zone 17, N. Y., display, sales and light mfg. bldg., 316-338 W. 13 St. **$810,584.**

O., Sharonville—WAREHOUSE—Solar Steel Corp., 2225 Bogen St., plans by James E. Allan, 914 Main St., Cincinnati, 120x350 ft. structural steel warehouse and office quarters, U. S. 25 at Kemper Rd. **$500,000.** CD 8/14.

▲ **Pa., Hollidaysburg**—RAILROAD TERMINAL—The Pennsylvania R.R., J. L. Gressitt, ch. engr., Broad St. Station Bldg., 1617 Pennsylvania Blvd., Phila., 4, 1 story, brick, railroad terminal and shops. **$1,000,000.**

▲ **Tex., Baytown**—PLANT—Humble Oil & Refining Co., Baytown, propylene plant (motor gasoline), **$5,200,000.** CD 7/29.

Tex., Norsworthy—STORAGE—Warren Petroleum Corp., Norsworthy, petroleum storage, **$855,300.**

▲ **Tex., Pasadena**—PLANT—Mathieson Chemical Corp., Pasadena, phosphate fertilizer plant. **$1,811,292.**

▲ **Tex., Pasadena** — PLANT — Phillips Chemical Co., Pasadena, fertilizer plant unit. **$3,086,050.**

UNCLASSIFIED

Conn., Middletown—LIGHTING SYSTEM—State P. Wks. Comn., State Office Bldg., Hartford, lighting system, electrical imprvs., Connecticut State Hospital. **$425,000.**

▲ **Iowa**—RURAL DISTRIBUTION LINES—Southwestern Power Co-operative, Creston, rural distr. line construction and general system imprvs., Union Co. **$2,318,000.** Stanley Eng. Co., Muscatine, consult. engr.

La., New Orleans—TELEVISION STATION—New Orleans Television Co., Magnolia Bldg., Dallas, Tex., television station. **$441,000.** Guy C. Hutcheson, Arlington, Tex., consult engr.

▲ **Md., Baltimore**—STADIUM—City, Bureau Bldg. Constr., 410 Municipal Bldg., rein.-con., brick, steel, cinder block, Baltimore Municipal Stadium, 33 St. **$2,400,000,** L. R. Kooken & Assoc., 2017 Maryland Ave., engrs. R. E. L. Williams, c/o owner, bldg. constr. engr. CD 11/17/50.

▲ **Mich., Detroit**—FAIR BUILDINGS—State, State Fair Bd. of Managers, Agriculture Comn., brick, steel buildings for home arts, junior show, sheep and swine, **$940,000;** general repairs to grounds, permanent out of doors electric system, **$270,000.** Michigan State Fair Grounds, Woodward Ave. between 7 and 8 Mile Rds. CD 1/26/50.

Mich., Flint—TELEVISION STATION—Booth Radio & Television Stations, Inc., (WBBC), 700 Buhl Bldg., Detroit, television station, **$595,000.**

Mich., Flint—TELEVISION STATION—Trebit Corp., (WFDF), 503 S. Saginaw St., television station, **$551,000,** Gillett & Bergquist, National Press Bldg., Wash., D. C., consult. engrs.

Mo., Independence—RECREATIONAL AREA—Jackson Co., **$600,000** bond election Nov. 4, reconstr. recreational area, Fort Osage and Dalls Mills.

▲ **Mo., Kansas City**—TELEVISION STATION—WHB Broadcasting Co., Scarritt Bldg., television station, **$1,400,000,** A. Earl Cullum, Jr., 4710 Lemmon Ave., Dallas, Tex., consult. engr.

Mo., St. Louis—TELEVISION STATION—KWK Inc., 1215 Cole St., television station, **$594,000,** A. Earl Cullum, Jr., 4710 Lemmon Ave., Dallas, Tex., consult. engr.

Mo., St. Louis—TELEVISION STATION—St. Louis Telecast Co. (WEW), 221 N. Grand St., television station, **$560,000,** Joseph A. Volk, 3642 Lindell Blvd., consult. engr.

Nebraska—RURAL DISTRIBUTION LINES—Howard Greeley Rural Public Power Dist., St. Paul, 96 mi. rural distr. lines, irrigation wells system imprvs., 32 mi. transmission lines, headquarters facilities, in Howard and Greeley Counties. **$600,000.** Raymond H. Reed & Co., Columbus, consult. engrs. CD 9/24.

▲ **Nebraska**—RURAL DISTRIBUTION LINES—K.B.R. Electric Membership Corp., Ainsworth, 813 mi. rural distr. lines, Brown Co. **$1,000,000.** Raymond H. Reed & Co., Columbus, consult. engrs. CD 1/19/49.

Nebraska—RURAL DISTRIBUTION LINES—Northeast Nebraska Rural P.P. Dist., Emerson, 345 mi. rural distr. lines in Dakota, Dixon and Thurston Counties. **$425,000.** Raymond H. Reed & Co., Columbus, consult. engrs. CD 3/14.

N. Y., Niagara Falls—TELEVISION STATION—Niagara Falls Gazette Publishing Co. (WHLD), 310 Niagara St., television station, **$548,000.** Russell P. May, 1422 F St. N. W., Wash., D. C., consult. engr.

N. Y., Rochester—TELEVISION STATION—WHEC, Inc., 40 Franklin St., television station, **$648,000.**

O., Cleveland—TELEVISION STATION—United Broadcasting Co. (WHK) 5000 Euclid Ave., television station. **$593,000.**

▲ **O., Waverly**—TRAILER COURT—Mrs. Frances Hamilton, Huntington, W. Va., trailer court on 50-acre site to serve construction workers on AEC project. **$1,000,000.**

Okla., Muskogee—TELEVISION STATION—Tulsa Broadcasting Co., 1850 S. Boulder St., Tulsa, television station, **$613,000.** Paul Godley Co., Old Quarry Rd., Upper Montclair, N. J., consult engr.

Okla., Oklahoma City—TELEVISION STATION—Koma, Inc. (KOMA) 228 W. Grand St., television station, **$676,000.** Paul Godley Co., Old Quarry Rd., Upper Montclair, N. J., consult. engrs.

Ore., Portland—TELEVISION STATION—Westinghouse Radio Stations, Inc., (KEX) 1625 K St., N. W. Wash., D. C., television station. **$855,000.**

Pa., Phila.—TELEVISION STATION—Westinghouse Radio Stations, Inc., 1625 K St. N. W., Wash., D. C., television station. **$440,000.**

▲ **Pa., Pittsburgh**—TELEVISION STATION—Westinghouse Radio Stations, Inc. (KDKA) 1625 K St. N. W., Wash., D. C., television station. **$1,810,000.**

Pa., Reading—TELEVISION STATION—Eastern Radio Corp. (WHUM) Berkshire Hotel, television station, **$614,000.** A. Earl Cullum, Jr., 4710 Lemmon Ave., Dallas, Tex., consult. engr.

Tenn., Knoxville—TELEVISION STATION—Mountcastle Broadcasting Co., Inc. (WROL), 612 Gay St. S. W., television station. **$559,000.** Gillett & Bergquist, Natl. Press Bldg., Wash., D. C., consult. engrs.

Tenn., Knoxville—TELEVISION STATION—Scripps-Howard **$546,000.** J. B. Epperson, 1816 E. 13 St., Cleveland, Radio, Inc. (WNOX), 110 S. Gay St., television station. O., consult. engr.

Tenn., Knoxville—TELEVISION STATION—WBIR, Inc., 618 S. Gay St., television station. **$411,000.** A. Earl Cullum, Jr., 4710 Lemmon Ave., Dallas, Tex., consult. engr.

▲ **Washington**—TRANSMISSION LINE—Pacific Power & Light Co., 920 S.W. 6 St., Portland, Ore. 43 mi. transmission line from Union Gap to Grandview, Yakima Co. **$1,600,000.**

Wisconsin—RURAL DISTRIBUTION LINES—Oconto Electric Co-operative, Oconto Falls, 43 mi. rural distr. line 29 mi. 33 kv transmission line and system imprvs., Oconto Co. **$497,000.**

▲ **Alberta and British Columbia**—GAS PIPE LINE—West Coast Transmission Co., Edmonton, Alta., natural gas pipe line from Peace River area of British Columbia and Alberta to west coast. **$110,000,000.** Application approved. CD 6/16/49.

▲ **Que., Port Alfred** — WHARF — Saguenay Terminals Ltd., Sun Life Bldg., Montreal, wharf on Saguenay River. Approx. **$1,500,000.**

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Bids—Low Bids—Contracts—Second Section

NEW ENGLAND

BIDS ASKED—BUILDINGS

▲† **Conn., Groton** — HOUSING — B.A. 12/3 — Public Housing Admin., 141 Milk St., Boston, Mass., EHT temporary housing, Fort Hills Home. CD 10/20.

HEAVY CONSTRUCTION

LOW BIDS AND CONTRACTS

CONNECTICUT—State Hy. Comn., Hartford, The Mariani Constr. Co., Inc., 222 Forbes Ave., New Haven, Conn., CA, **$599,039**, single span bridge over Housatonic River and approaches, F-45 (9), New Milford. Bids Oct. 6. CD 10/10, under LB.

BUILDINGS

LOW BIDS AND CONTRACTS

Grande & Son, Inc., 425 A. Broadway, Everett, Mass. LB **$839,510**. est. $825,000. high SCHOOL Cudworth Rd., SCITUATE, MASS. Town, Cudworth Rd., Scituate, Mass. Bids Oct. 23. CD 10/7.

▲ **Fanning & Doorley Constr. Co., Inc.**, 274 Kingsley Ave., Providence, R. I. CA. **$1,500,000**. GYMNASIUM, PROVIDENCE, R. I. Providence College River Ave., Providence, R. I. Awarded Oct. 20. CD 10/20, under LB.

MIDDLE ATLANTIC

BIDS ASKED—HEAVY CONSTRUCTION
STATE HIGHWAY LETTINGS
STREETS AND ROADS
November 12 New Jersey — November 20 New York

▲† **Del., Dover**—HEATING PLANT, etc.—B.A. 11/21—U. S. Eng., 121 N. Broad St., Phila., Pa., central heating plant, distr. system, Dover Air Force Base. $1,000,000. Whiteside, Foster, Damon & Doane, Inc., du Pont Bldg., Wilmington, archt. CD 9/31/51.

BIDS ASKED—BUILDINGS

▲ **Pa., Emporium**—HIGH SCHOOL—B.A. 12/2—Emporium Area Joint School Auth., Emporium, 1 story, 400x600 ft., brick, block high school, $1,000,000. Raymond Viner Hall, Lynn Hall, Port Allegheny, archt. CD 5/20.

▲† **N. Y., West Milton**—BUILDING CONSTRUCTION—B.A. 1/6—U. S. Atomic Energy Comn., Schenectady Operations Office, Knolls Atomic Power Laboratory, Bldg. A1, Niskayuna, general building construction services and facilities, Proj. SIR, Knolls Atomic Power Laboratory, Inv. No. AE-52-SCH-69. $4,000,000-$8,000,000. Plans deposit $50. CD 9/18.

HEAVY CONSTRUCTION

LOW BIDS AND CONTRACTS

▲ **NEW YORK**—Bureau Contracts & Accounts, The Governor Alfred E. Smith State Office Bldg., Albany, **John Arborio, Inc.**, W. Cedar St., Poughkeepsie, N. Y. CA. **$1,609,778**, est. $2,017,000, 2.58 Thy., 1.97 acc. New York State Thruway-Catskill Sect. Sub. 3 (Whiteport Kingston Tr. 2); A. Town Rd.; Co. Rd. 42 and Service Dr., CT. 52-6, ST. 52-21, Ulster Co. Bids Sept. 18. CD 9/22, under LB.

▲ **NEW YORK**—Bureau Contracts & Accounts, The Governor Alfred E. Smith State Office Bldg., Albany, **Brunner Asphalt & Constr. Inc.**, 237 Kensington Ave., Buffalo, N. Y. CA. **$844,698**, est. $850,000. 0.99 mi. (Acc. 0.67) City of Buffalo: Humboldt Parkway Extens. (Agassiz Cir.-Delaware Ave.) FAC 52-7, Erie Co.;

Louis Longhi & Son, Inc., Box 580, Glens Falls, N. Y. CA. **$798,236**, est. $844,000. 2.13 mi. Syracuse-Lafayette, S.H. 5365, FARC, 42-8, Onondaga Co.;

The Lane Constr. Corp., 37 Colony St., Meriden, Conn. CA. **$688,575**, est. $751,000. 2.88 mi. New York State Thruway-Ontario Sect.-Sub. 14 (Manchester, Rte. N. Y. 21 Interchange), Chapin-Palmyra Pt. 2, S.H. 1549, O.T. 52-13, R.C. 52-98, Ontario Co. Grand total $2,331,509. Bids Oct. 2. CD 10/6, under LB.

BUILDINGS

LOW BIDS AND CONTRACTS

▲ **Bd. Educ., Central School Dist. 1**, Towns of Yorktown, Cortland, Somers, Carmel and Putnam Valley in Shrub Oak Central School, Rte. 6, Shrub Oak, N. Y., rejected bids Sept. 22, Junior-Senior HIGH SCHOOL, Rte. 6, SHRUB OAK, N. Y. LB. **$1,275,000**. Will re-advertise. CD 9/26, under LB.

▲ **Robert Fallan**, Upper Darby Pa., Separate Contracts. **$5,000,000**. RESIDENTIAL DEVELOPMENT, Mount Ephraim Ave., CAMDEN, N. J. Dante J. D'Anastasie, 1815 Federal St., Camden, N. J., archt.

† **Andrew Christenson & Son, Inc.**, 225 W. Grand St., Elizabeth, N. J., CA. **$636,003**, Elementary SCHOOL, FORT DIX, N. J. U. S. Housing & Home Finance Agency, 346 Broadway, New York, N. Y. Bids Sept. 23. CD 10/6, under LB.

▲ **John W. Harris Assoc.**, 30 Rockefeller Plaza, New York 20, N. Y., CA. Approx. **$1,000,000**, 4 story OFFICE, Park Ave., LINDEN, N. J. Esso Standard Oil Co., 15 W. 51 St., New York, 19, N. Y.

Spano Griffith Shedler & Wallace, 69 St. and Walnut St., Upper Darby, Pa. Separate Contracts. **$826,800**, RESIDENTIAL DEVELOPMENT, Ashland Rd., etc., GLENOLDEN, PA.

Moyer Bros., 2605 Beale Ave., Altoona, Pa., CA. Approx. **$500,000**. 10 three story, brick, block 90 family APARTMENTS, MIDLAND, PA. Hillcrest Manor, Inc., Midland, Pa., Arthur Tennyson, Washington Rd., Pittsburgh 16, Pa., archt.

Turner Constr. Co., 1500 Walnut St., Phila., Pa. LB **$809,000**. general contract GARAGE bldg., Walnut and 17 Sts. and roads and walks, PHILA., PA. Phila. Parking Auth., Packard Bldg., Phila., Pa. Simon & Bulware, 123 S. Broad St., Phila., Pa., archts. Bids Oct. 7.

McCloskey & Co., 1620 W. Thompson St., Phila., Pa., CA. **$834,000**, general contract, Anna B. Pratt Elementary SCHOOL, PHILA., PA. Bd. Educ., 21 and Winter Sts., Phila., Pa. CD 10/16, under LB.

Potteiger Co., Inc., 328 Tulpehocken Ave., West Reading, Pa., LB **$519,813**, food service bldg. and necessary paving at HOSPITAL, WEST READING, PA. Reading Hospital, 6 and Spruce Sts., Reading, Pa. Gilbert Associates, Inc., 412 Washington St., Reading, Pa., engr. CD 2/2/49.

John Tester & Son, Inc., 1620 2 St. S.W., Wash., D. C. LB. **$672,411**, Elementary SCHOOL, Wahler Pl. and 9 St. S.E., WASH., D. C. Dist. of Columbia Bd. Educ., District Bldg., Wash., D. C. Bids Oct. 23. CD 10/9.

Consolidated Constr. Co., 3007 N. Claymont St., Wilmington, Del., CA, **$600,000**. RESIDENTIAL DEVELOPMENT, Concord Manor and Prospect Ave., WILMINGTON, DEL. Capa Corp., 3007 N. Claymont St., Wilmington, Del.

SOUTH

BIDS ASKED—HEAVY CONSTRUCTION
STATE HIGHWAY LETTINGS
BRIDGES
November 19 Louisiana — November 20 Florida
STREETS AND ROADS
November 12, 20 Florida — November 19 Louisiana

BIDS ASKED—BUILDINGS

▲ **Ala., Gadsden**—HOUSING—B.A. 12/1—Gadsden Housing Auth., Gadsden, 146 housing units, Proj. Ala 49-4, $1,500,000, Paul W. Hofferbert, Gadsden, archt.

HEAVY CONSTRUCTION

LOW BIDS AND CONTRACTS

Southern Bell Telephone Co., Hurt Bldg., Atlanta, Ga. Owner Builds. **$450,000**. telephone lines, etc., CHARLESTON, S. C.

† **McKoy-Helgerson Co.**, 320 S. Hudson St., Greenville, S. C. CA **$473,415**. exten. Supply Bldgs. 110 and 111, NOY 71583, Jacksonville Naval Air Station, JACKSONVILLE, FLA. Officer in Charge of Constr., Box 365, Naval Base, S. C. Bids Oct. 22. CD 10/14.

▲† **James F. O'Neil Co.**, 1501 S. Rendon St., New Orleans, La. CA **$931,000**. Sect. 1A cooling tower; CA **$816,900**. Sec. 1B furnishing, installing refrigeration machine units for dehumidification sys., Eng. 41-243-53-23, Michoud Ordnance Plant, NEW ORLEANS, LA., U. S. Eng., 606 Santa Fe Bldg., Galveston, Tex. CD 9/25, under LB.

BUILDINGS

LOW BIDS AND CONTRACTS

Thomas H. Meletis, 734 N. St. Asaph St., Alexandria, Va., rejected bids Sept. 25, 7-story Virginia HOTEL. ALEXANDRIA, VA. LB **$975,625**. CD 10/2, under LB.

States Constr. Co., Inc. (Sponsor), 3000 Warwick Ave., Newport News, Va., LB Approx. **$800,000**. construct, manage, finance 114 HOUSING units, Naval Mine Depot, YORKTOWN, VA. P. Wks. Office, Fifth Naval Dist., U. S. Naval Base, Norfolk, Va. CD 10/6.

General Constr. Co., 1815 Blanding St., Columbia, S. C. CA. **$686,610**, Dreher HIGH SCHOOL addn., COLUMBIA, S. C. City, City Hall, Columbia, S. C. Bids Oct. 14. CD 10/1.

MIDDLE WEST

BIDS ASKED—HEAVY CONSTRUCTION
STATE HIGHWAY LETTINGS
BRIDGES
November 12 Michigan — November 23 Illinois, Michigan
STREETS AND ROADS
November 12 Michigan — November 13 Illinois, Michigan

HEAVY CONSTRUCTION

LOW BIDS AND CONTRACTS

▲ **OHIO**—State Hy. Dpt., Columbus, Zone 15, rejected bids Oct. 14. T-35 and structure and T-71, 0.557 mi., Longview State Hospital Dr., SR 561-6.81, City of Cincinnati, Parts Nos. 1 and 2, Hamilton Co., LB **$224,355**, est. $203,780; Type T-50 on B-71 and structures, 0.771 mi. SR 46, (3.35-3.65); S.R. 169, (2.14-2.74), U-UG-635 (4), U-1098 (1), Trumbull Co., LB **$1,688,446**, est. $1,593,000. CD 10/22 under LB.

▲† **F. & Y. Building Service, Inc.**, 319 E. Town St., Columbus, O., LB **$1,765,432**, est. $2,048,810, two 68x350 ft. double cantilever maintenance hangers with shops at Lockbourne Air Force Base, Serial No. ENG 46-022-53-12, COLUMBUS, O. U. S. Eng., 237 Fourth Ave., Huntington 18, W. Va. Bids Oct. 17. CD 9/24.

ILLINOIS—State Div. Hys., Springfield, rejected bids Oct. 15, c. conc. base and c. conc. base course wid'n., 2 bridges, U. S. 36, Scott Co. LB, **$893,347**. CD 10/21, under LB.

† **Mayfair Constr. Co.**, 5660 N. Kedzie St., Chicago, Ill., CA, **$925,000**. misc. bldgs., training, storage, A.I.O. shops, kitchen, training group headquarters, SCOTT AIR FORCE BASE, ILL. U. S. Eng., Merchandise Mart, Chicago 54, Ill. Awarded Oct. 16. CD 6/29/51.

BUILDINGS

LOW BIDS AND CONTRACTS

▲ **B. G. Danis Co.**, 1518 E. First St., Dayton, O., CA **$1,033,220**, general constr.;

Huffman-Wolfe Co., 19 W. 4 St., Dayton, O., CA **$334,000**. plumbing, heating, ventilating for HOSPITAL addn. incl. new 4-story maternity wing and addn. of 5th floor of main hospital structures, DAYTON, O. Good Samaritan Hospital, 1425 W. Fairview St., Dayton, O. Bids Sept. 23. CD 8/23.

▲ **United Industrial Constructors, Inc.**, P. O. Box 747, Beverly, O., CA. Approx. **$2,000,000**. 1 story, brick, concrete, steel FACTORY to produce electric furnaces, JACKSON, O. Globe Iron Co., Jackson, O. (Correction —contractors address). CD 10/2 under CA.

▲ **J and L Realty Co.**, 801 Lemcke Bldg., Indianapolis, Ind., Owner Builds, **$350,000**, 35 homes in Arlington Ave. area; **$1,500,000**, 150 HOMES, E. 32 and 33 Sts., INDIANAPOLIS, IND.

▲ **Coath & Goss, Inc.**, 5103 W. Lake St., Chicago, 44, Ill., LB, **$1,533,000** Argo Community High SCHOOL, SUMMIT, ILL. School District 217, Summit, Ill. Bids Oct. 22.

Standard Constr. Co., Inc., 250 Builders Exchange Bldg., Minneapolis, Minn., LB **$473,833**. general constr. 4 story, 40x144 ft. HOSPITAL addn., LA CROSSE, WIS. LaCrosse Lutheran Hospital Assoc., 1910 South Ave., LaCrosse, Wis. Bids Oct. 21. CD 9/23.

Sorenson-Gross Constr. Co., Flint, Mich. CA **$737,000**. 2 story, bsmnt., 40x180 ft., brick, steel, concrete McKinley Junior High SCHOOL, 90x100 ft. gymnasium, 50x55 ft. auditorium, FLINT, MICH. City, Bd. Educ., Flint, Mich. Bids Oct. 14. CD 9/25.

▲ **A. J. Etkin Constr. Co.**, 13336 Livernois St., Detroit, Mich., and **Collins & Catlin**, Port Huron, Mich. CA **$1,650,000**. 3 story, brick, steel, concrete CITY-COUNTY BLDG., incl. 90,000 sq. ft. office, 50,000 sq. ft. jail, PORT HURON, MICH. City & St. Clair County, City-County Bldg. Auth., Port Huron, Mich. CD 9/23, under LB.

▲ **Louis Home Builders Co.**, 18035 James Couzens Dr., Detroit, Mich. CA Est. **$3,000,000**. 275 brick ranch HOUSES, W. Chicago Blvd., REDFORD, MICH. C. Bruton Co., 15100 Fenkel St., Detroit, Mich.

WEST OF MISSISSIPPI

BIDS ASKED—HEAVY CONSTRUCTION
STATE HIGHWAY LETTINGS
BRIDGES
November 14 Texas
STREETS AND ROADS
November 14 Texas

▲† **Mo., Sedalia** — MAINTENANCE HANGAR — B.A. 11/19—U. S. Eng., 601 Davidson Bldg., Kansas City 8, Mo., maintenance hangar, Sedalia Air Force Base, Eng. 23-028-53-28, $2,250,000, Howard-Needles-Tammen & Bergendoff, 921 Walnut St., Kansas City, Mo., engrs. CD 10/17.

▲ **Mo., Kansas City** — B.A. 1/12 — Jackson and Clay Counties, City of Kansas City, Mo., c/o Reed McKinley, dir. P. Wks. Dpt., City Hall, superstructure Pasco Bridge over Missouri River. $16,000,000. Howard, Needles & Bergendoff, 921 Walnut St., Kansas City, Mo., engrs. CD 9/15.

BIDS ASKED—BUILDINGS

† **N. M., Las Cruces**—WAREHOUSES—B.A. 11/13—U. S. Eng., Box 1538, Albuquerque, 3 permanent type warehouses, $450,000; utilities (outside), $85,000, in White Sands Proving Ground, Serial No. Eng. 29-005-53-32. Plans deposit $50 each. Extended date.

Tex., Nacogdoches—SCHOOLS—B.A. 11/25—Independent School Dist., c/o B. A. Copass, supt. Schools, Nacogdoches, two 18-classroom brick, tile elementary schools. $950,000. Plans deposit $25. Preston M. Geren, 1607 Fort Worth Natl. Bank Bldg., Fort Worth, archt. CD 3/14.

HEAVY CONSTRUCTION

LOW BIDS AND CONTRACTS

▲ **TEXAS**—State Hy. Comn., State Highway Bldg., Austin,

McKenzie Constr. Co., Box 806, San Antonio, Tex. CA. **$1,653,719**, asph. and c. conc. pavement, Urban Expressway Unit, Atlanta to Jackson St., Cont. No. 17-20-10, FP (UI) 1083 (5), Bexar Co. Bids Oct. 21. CD 10/27, under LB.

▲ **TEXAS**—State Hy. Comn., State Highway Bldg., **Austin Bridge Co. & Austin Road Co.**, P. O. Box 1590. Dallas, Tex., LB **$1,061,833**, grading, structures,

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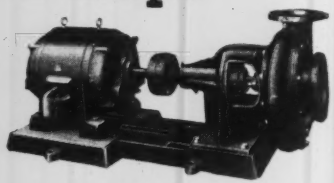

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storm sewers, concrete paving 2.201 mi. Hy. U. S. 75, Proj. U 515 (18), Dallas Co.;

John F. Buckner & Sons, P.O. Box 76, Cleburne, Tex., LB **$111,391,** grading, structures, base and surf. 9.62 mi. Hy. FM 1056 and 1442, Proj. S 637 (1), Collingsworth Co.; LB **$127,920,** grading, structure, base and surf. 7.489 mi. Hy. FM 1606, Proj. V 1526-1-2, Scurry Co.; LB **$67,006,** grading, structures, base, surf. 4.234 mi. Hy. FM 917, Proj. S 1348 (2), Johnson Co.;

A. L. Bucy, 804 Avenue J, Brownwood, Tex., LB **$117,025,** grading, structures, base and surf. 8.581 mi. Hy. FM 576 and 1853, Proj. S 611 (3), Stephens Co.;

Campbell & Kay, P. O. Box 836, Tyler, Tex., LB **$81,243.** grading, structures, base, surf. 5.345 mi. Hy. FM 1767, Proj. R 725-3-1, Rains Co.;

Cooper & Woodruff, 222 Mays Bldg., Amarillo, Tex. LB **$305,003,** grading, structures, base, surf. 30,562 mi. Hy. FM 296 and 1879, Proj. RV 790-1-5, RV 1141-1-2, RV 1811-1-1, Dallam Co.;

J. R. Fanning, P.O. Box 1047, Lubbock, Tex., LB **$129,556,** grading, structures, base surf. 6.165 mi. Hy. FM 652, Proj. S 1578 (1), Reeves and Loving Counties;

J. R. Fanning & Henry Stafford, P. O. Box 1047, Lubbock, Tex., LB **$93,349,** grading, structures, base, surf. 8.927 mi. Hy. FM 1742, Proj. R. 1842-1-1, Martin Co.;

J. B. Griffin, 204 Kirven Ave., Waxahachie, Tex., LB **$93,678,** grading, structures, base and surf. 11.546 mi. Hy. FM 708 and 218, Proj. S 1848 (1), Bosque Co.;

E. W. Hable & Sons, Corsicana, Tex., LB **$167,485.** grading, structures 9.573 mi. Hy. SH 304, Proj. S 1508 (1), Gonzales Co.;

Kerr & Middleton, 2206 Clovis Rd., Lubbock, Tex., LB **$123,052.** grading, structures, base and surf. 11.904 mi. Hy. FM 784 and 579, Proj. S 1564 (1), Hale and Floyd Counties;

Ernest Loyd, P.O. Box 1120, Fort Worth, Tex., LB **$87,591.** grading, structures, base and surf. 8.134 mi. Hy. FM 374, Proj. S 455 (2), Archer Co.; LB **$110,777,** grading, structures, base and surf. 10.944 mi. Hy. FM 1661 and 707, Proj. S 1605 (1), Jones Co.;

Dave McGollough, P.O. Box 403, Gilmer, Tex., LB **$116,267,** grading, structures, base and surf. 11.531 mi. Hy. FM 1002 and 795, Proj. R 647-3-3, R 1018-1-2, R. 1762-I-1, Upshur Co.;

R. W. McKinney, P.O. Box 190, Nacogdoches, Tex., LB **$133,629,** grading, structures, base and surf. 7.63 mi. Hy. FM 1827, Proj. R 1746-1-1, Collin Co.;

Dan Pennington, Grapeland, Tex., LB **$112,557,** grading, structures, base and surf. 18.593 mi. Hy. FM 693, Proj. S 1762 (1), Kinney Co.;

Reynolds & Huff, P.O. Box 88, Tyler and C. W. Howard, Madisonville, Tex., LB **$84,303,** grading, structures, base and surf. 4.967 mi. Hy. FM 1647, Proj. S 1643 (1), Wood Co.;

Texas Bitulithic Co., P.O. Box 5297, Dallas, Tex., LB **$115,274,** wid'n with hot mix b. conc. pavement 1.07 mi. Hy. U. S. 287, Proj. C 172-1-12, Tarrant Co.;

Thomas & Ratliff, Rogers, Tex., LB **$138,629,** grading, structures, base and surf. 6.919 mi. Hy. FM 1294 and 954, Proj. 267-3-1, R 267-3-2 and R 1265-1-2, Fayette Co.;

Thomas & Ratliff, Rogers, Tex., and **Fred Hall & Son,** Valley Mills, Tex., LB **$501,901,** flexible base and hot mix, b. conc. pavement 0.97 mi. Hy. U. S. 81 and 190, Proj. FI 644 (10), Bell Co. Bids Oct. 22. CD 10/6 and 10/9.

† **Cage Bros.,** Rte. 10, Box 46, San Antonio, Tex., LB **$593,246,** est. $401,966, addnl. embankment slope protection at Dam B, on U. S. Hy. 190, Neches River, CIVENG 41-443-53-10, TEXAS. U. S. Eng., 100 W. Vickery St., Fort Worth, Tex. Bids Oct. 24. CD 10/15.

▲† **Enix Constr. Co.,** 1111 W. 20 Ave., Amarillo, Tex., LB **$1,274,960,** Lot 1, utilities, grading;

Wilder Constr. Co., Dan Waggoner Bldg., Fort Worth, Tex. LB **$164,665,** Lot 2, water tank;

Shortall Constr. Co., 1005 Grigsby St., Dallas, Tex. LB **$45,899,** Lot 3, railroads, at Camp Bowie, ENG 41-443-53-17, BROWNWOOD, TEX. U. S. Eng., 100 W. Vickery St., Fort Worth, Tex. Bids Oct. 23. Virgil A. Davis, Odessa, Tex., and F. T. Drought, 117 W. Pecan St., San Antonio, Tex., engrs.

† **E. H. Reeder Constr. Co.,** 2128 Hawes St., Dallas, Tex. LB **$596,028,** est. $858,541, const. Farmers Branch Diversion Conduit, Carswell Air Force Base, ENG 41-443-53-15, FORT WORTH, TEX. U. S. Eng., 100 W. Vickery St., Fort Worth, Tex. Bids Oct. 24. CD 10/2.

† **Worth Constr. Co.,** 312 E. Berry St., Fort Worth, Tex. LB **$495,509,** est. $504,548, maintenance apron at Carswell Air Force Base, ENG 41-443-53-14, FORT WORTH, TEX. U. S. Eng., 100 W. Vickery St., Fort Worth, Tex. Bids Oct. 21. CD 9/30.

Harrison Eng. & Constr. Co., 4638 J. C. Nichols Parkway, Kansas City, Mo., LB **$77,281,** apron in vicinity admin. bldg.; LB **$289,601,** Northeast-Southwest runway imprvs.; LB **$269,000,** reconstruction North-South runway; LB **$92,237,** reconstruction North-South taxiway, at Municipal Airport, HOUSTON, TEX. City, City Hall, 900 Brazos St., Houston, Tex. L. Fugate, city engr. Bids Oct. 24.

BUILDINGS

LOW BIDS AND CONTRACTS

Delhi School Dist., Delhi, Ia., rejected bids Oct. 16, SCHOOL addn. DELHI, IA. Est. **$500,000.** Will readvertise. CD 10/9.

O. D. Milligan Constr. Co., Manhattan, Kan. CA. **$854,317.** general contract JUNIOR COLLEGE and HIGH SCHOOL, INDEPENDENCE, MO. Bd. Educ., c/o W. T. Newkirk, pres., 1203 N. Penn St., Independence, Mo. Bids Oct. 20. CD 10/3.

Jas. H. Stanton Constr. Co., 9001 Wornall St., Kansas City, Mo. CA. general contract;

Fair-Way Plumbing & Heating Co., 1869 E. 80 St., Kansas City, Mo. CA. plumbing and heating;

Plaza Electric Co., 606½ W. 48 St., Kansas City, Mo. CA, electrical work, 87 RESIDENCES, Gregory Heights addn., KANSAS CITY, MO. Ong Aircraft Corp., Wm. Ong, 73 and Blue Ridge St., Kansas City, Mo. Total est. cost **$920,000.** John Grandstedt, 198 W. Sweeney St., Kansas City, Mo., part archt.

New Subiacco Church, Rt. Rev. Paul Nahlen, Subiacco, Ark. Day Labor, Est. **$500,000.** CHURCH, SUBIACCO, ARK. E. Brielmaier & Sons, 735 N. Water St., Milwaukee, Wis., archts.

Omaha Public Power. Dist., 17 and Harney Sts., Omaha, Neb., Owner Builds. Approx. **$751,000.** POWER PLANT addn., OMAHA, NEB. A. G. Johnson, c/o owner, ch. engr. CD 8/17/51.

Bushboom & Rauh, Salina, Kan. LB **$938,000.** general contract high SCHOOL, ABILENE, KAN. Bd. Educ., Abilene, Kan. Bids Oct. 14. CD 9/30.

▲ **Hahner & Foreman,** 121 N. Waco St., Wichita, Kan. CA. Est. **$1,000,000.** NEWSPAPER BLDG., WICHITA, KAN. Beacon Publishing Co., Max and John Levand, (owners), Beacon Bldg., Wichita, Kan. CD 9/10, under LB.

▲† **Cullum & Whittle Contractors,** Box 6044, Dallas, Tex., CA **$3,689,000.** 54 earth-covered ammunition STORAGE MAGAZINES, NOY 74449, Spec. 24746, McALESTER, OKLA. U. S. Govt., Officer in Charge of Construction, 8th Naval Dist., Bldg. 16, New Orleans, La. Bids Oct. 2, awarded Oct. 24. CD 10/8, under LB.

Brown & Root, Inc., Box 3, Houston, Tex., CA. design and construct. Approx. **$750,000.** Unit 1, shoe PLANT to mfg. heeling and soling materials, BRYAN, TEX. International Shoe Co., 1059 Washington Ave., St. Louis, Mo. CD 10/1.

Calhoun Constr. Co., Box 16, Houston, Tex., CA. Approx. **$690,000.** 108-unit APARTMENT, HOUSTON, TEX. Shannon Pfeffer, 3320 Binz St., Houston, Tex. CD 9/26.

Crawford Constr. Co., 203 N. 16 St., McAllen, Tex. CA. **$565,652.** General contract municipal HOSPITAL, McALLEN, TEX. City, McAllen, Tex. Bids Oct. 7. CD 10/15, under LB.

Embe Building Co., 6901 Almeda Rd., Houston, Tex. Owner Builds. Approx. **$450,000.** Unit 2, 45 DWELLINGS, PASADENA, TEX. CD 9/8.

Riedesel-Lowe Constr. Co., Cheyenne, Wyo., CA **$668,199,** Department STORE, CASPER, WYO. Owner c/o Walter Kruetzing, archt., Stapleton Bldg., Billings, Mont. Bids Oct. 10. CD 9/30.

FAR WEST

BIDS ASKED—HEAVY CONSTRUCTION

STATE HIGHWAY LETTINGS

BRIDGES

November 19 California

STREETS AND ROADS

November 20 California

BIDS ASKED—BUILDINGS

Wash., Seattle—SCHOOL—B.A. 11/13.—Shoreline School Dist. 412, N. 137 and Roosevelt Way, 58,000 sq. ft. frame Hamlin Park Intermediate School, E. 160 St. and 25 Ave. N. E. $750,000. Mallis & DeHart, Lyon Bldg., Seattle, Zone 4, archts. CD 9/19.

Idaho, Pocatello—LIBRARY—B.A. 11/14—State Bd. Educ., Pocatello, library at Idaho State College, $750,000. CD 1/15.

HEAVY CONSTRUCTION

LOW BIDS AND CONTRACTS

ARIZONA—State Hy. Comn., 17th Ave. and Jackson Sts., Phoenix.

W. J. Henson, Box 471, Prescott, Ariz., LB **$274,673,** Rock Springs-Prescott Hy., furnishing, placing subgrade seal select material, aggregate base, bit. surf. tr., road guard, guide posts, Yavapai Co.;

Arizona Sand & Rock, Box 596, Phoenix, Ariz., LB **$193,468,** Holbrook-Lupton Hy., 3.75 mi. removing present bit. surf. and aggregate base, furnishing, placing new select material, aggregate base, bit. plant mix, Navajo Co.;

Wallace & Wallace, Box 470, Phoenix, Ariz., LB **$126,831.** Kirkland-Hillside Hy., 4.25 mi. grading, draining, select material, Yavapai Co. R. C. Perkins, c/o owner, engr. CD 6/12.

† **L. A. Hopkins & Co.,** Yakima, Wash., CA. **$865,000** tactical facilities, CAMP HANFORD, WASH. U. S. Eng., U City-County Airport, Walla Walla, Wash.

† **Schutt Constr. Co., Inc.,** Genoa, Wis., LB. **$487,000.** clear 1,000 acres, 15,000 rod fences, McNary Dam Reservoir, Civeng 45-164-53-26, OREGON-WASHINGTON. U. S. Eng., City-County Airport, Walla Walla, Wash. Bids Oct. 22. CD 9/17.

† **Bureau Reclamation, Dpt. Interior,** Bldg. 1A, Denver Federal Center, Denver, Colo. rejected bids Oct. 7, installing 3 large crest gates at Savage Rapids Dam, Spec. DS-3765, Grants Pass Proj., OREGON. LB $577,500. CD 10/14, under LB.

▲ **CALIFORNIA** — State Div. Hys., P. Wks. Bldg., Sacramento,

M. J. Ruddy & Son, 922 "J" St., Modesto, Calif., LB, **$221,362** wid'n, plant mix on untreated rock surf. 5 mi. between 3.3 mi. E. of San Joaquin Co. line and 1.5 mi. west of Valley Springs, Calaveras Co.;

Eston & Smith, 1215 Michigan St., San Francisco, Calif.,

LB, **$732,384,** plant mix on cement treated surf. rein.-con. slab girder bridge across Mill Creek (portion) between 4 mi. E. of Cove Rd. and White Deer Rd., Fresno Co.;

Baun Constr. Co., 324 Princeton Ave., Fresno, Calif., LB, **$174,807,** plant mix on imported base material surf. 5.1 mi. Dickenson Ave. between McMullin grade and Whitesbridge Rd., Fresno Co.;

J. R. Reeves, P.O. Box 1072, Sacramento, Calif., LB **$130,043,** placing untreated rock base apply penetration treatment 2.7 mi. Auburn Folsom Hy. between 6.3 mi. and 9 mi. north of Sacramento Co. line, Placer Co. Bids Oct. 22. CD 10/1.

† **San Francisco Bridge Co.,** 503 Market St., San Francisco, Calif., CA, **$839,300,** seal wall at U. S. Naval Air Station, Runway 13-31, NOY 75173, Spec. 35369, ALEMEDA, CALIF. Twelfth Naval Dist., San Bruno, Calif. Bids **Sept. 17,** awarded Oct. 22. CD 9/24, under LB.

▲ **Morrison-Knudsen Co. & R. A. Westbrook,** 411 W. 5 St., Los Angeles, Calif., CA, **$3,143,694,** est. $3,000,000 Garvey Reservoir for Colorado Aqueduct Distribution System, Monterey Park, LOS ANGELES, CALIF. Metropolitan Water Dist. of Southern Calif., 306 W. 3 St., Los Angeles, Calif. Bids Oct. 8, awarded Oct. 14. CD 10/14, under LB.

† **Haddock Engineers Ltd.,** 1616 S. Greenwood Ave., Montebello, Calif., LB, **$982,611,** security service operation bldg., March Air Force Base, ENG 04-353-53-27, MARCH AIR FORCE BASE, CALIF. U. S. Eng., 751 S. Figueroa St., Los Angeles, Calif. Bids Oct. 15. CD 9/25.

† **J. F. Cummins,** 245 E. Olive St., Burbank, Calif., LB, **$715,652,** rehabilitating 32 buildings and constr. B.O.Q., ENG 04-353-53-26, MARCH AIR FORCE BASE, CALIF. U. S. Eng., 751 S. Figueroa St., Los Angeles, Calif. Bids Oct. 17.

BUILDINGS

LOW BIDS AND CONTRACTS

Farmer & Godfrey Constr. Co., 2801 N. 32 St., Phoenix, Ariz., CA, **$772,758,** 1 and 2 story 130-unit APARTMENT UNITS, PHOENIX, ARIZ. Michael A. Bouskos, c/o Herman A. Bell, archt., 130 W. Portland St., Phoenix, Ariz. Awarded October 12.

William Peper Constr. Co., 3026 N. 16 St., Phoenix, Ariz. CA. **$622,522,** 6 units new Tempe HIGH SCHOOL, TEMPE, ARIZ. Tempe School Dist., Tempe, Ariz. Bids Sept. 29, awarded Oct. 10. CD 9/16.

V. D. Riverman, 3609 N.E. Glisan St., Portland, Ore. LB. **$670,000.** Peninsula Grade SCHOOL, PORTLAND, ORE. School Dist. 1, 631 N.E. Clackamas St., Portland, Ore. Bids Oct. 22. CD 10/1.

Paul W. Speer, Inc., 3425 Cahuenga Blvd., Los Angeles, Calif., CA, **$575,900,** Enterprise Junior High SCHOOL addns., alterations, COMPTON, CALIF. Compton Union High School District, 601 S. Acacia St., Compton, Calif. Bids Sept. 19. CD 9/29, under LB.

R. G. Trigg, 5325 Atlantic Ave., Long Beach, Calif., CA, **$696,000** 100 frame, stucco DWELLINGS, Tract 18482 GARDENA, CALIF. Anaheim Constr. Co., 5325 Atlantic Ave., Long Beach, Calif.

Nylin P. Hurd, 1317 Santiago Ave., Santa Ana, Calif., LB, **$562,548,** 1 frame, stucco, 2 rein.-con. Huntington Beach High SCHOOL buildings, HUNTINGTON BEACH, CALIF. Huntington Beach Union High School Dist., Huntington Beach, Calif. Bids Oct. 21. CD 10/10.

Atherton Co., 13421 San Antonio Dr., Norwalk, Calif., CA **$582,400,** 56 frame, stucco HOUSES, Nipomo, Ostrom and Vuelta Grande Aves., LAKEWOOD, CALIF. Finch Homes, Bluebird Homes, Canary Homes, Dalebird Homes, 13421 San Antonio Dr., Norwalk, Calif.

Guy F. Atkinson Co., Box 259, Long Beach, Calif., CA, **$788,500,** superstructure for main bldg. at Valley STEAM PLANT, LOS ANGELES, Los Angeles Dpt. Water & Power, 207 S. Broadway, Los Angeles. Bids Sept. 18, awarded Oct. 14. CD 9/29, under LB.

Swinerton & Walberg, 225 Bush St., San Francisco, Calif., LB, **$535,500,** HOSPITAL addn., Proj. 2, MARTINEZ, CALIF. Contra Costa Co., Hall of Records, Martinez, Calif. CD 7/17/51.

L. C. Anderson Co., 3040 Hancock St., San Diego, Calif. LB, **$548,900,** est. $500,000. 36,000 sq. ft. Mission Elementary SCHOOL, OCEANSIDE, CALIF. Oceanside-Libby Union School Dist., 210 S. Horne St., Oceanside, Calif. Bids Oct. 15.

▲ **Riha Constr. Co., & B. C. Hammann,** 4859 El Cajon Blvd., San Diego, Calif., LB, **$1,603,000,** 16 buildings at Mission Bay Senior High SCHOOL (formerly Pacific Beach High School) El Canan, SAN DIEGO, CALIF. San Diego Unified Schol Dist., 825 Union Ave., San Diego, Calif. Bids Oct. 21. CD 10/1.

▲ **C. L. Peck,** 816 W. 5 St., Los Angeles, Calif., and **Cahill Bros., Inc.,** 26 Sansome St., San Francisco, Calif., CA, **$15,000,000,** 9 BREWERY buildings, SAN FERNANDO, CALIF. Anheuser-Busch, Inc., 721 Pestalozzi St., St. Louis, 10, Mo. CD 8/20.

Dinwiddie Constr. Co., Inc., 200 Crocker Bldg., San Francisco, Calif., CA, **$753,483,** FACTORY addn., SAN FRANCISCO, CALIF. Planters Nut & Chocolate Co., 503 Davis St., San Francisco, Calif. Awarded Oct. 21. CD 7/14.

ALASKA

HEAVY CONSTRUCTION

LOW BIDS AND CONTRACTS

† **Pacic Alaska Contractors, Inc.,** 2907 A St., Tacoma, Wash., LB. **$714,300.** director finder station, Spec. 31608, Cape Chiniak, ALASKA. 17th Naval Dist., Kodiak, Alaska. Bids **Oct. 22.** CD 10/15.

CANADA

HEAVY CONSTRUCTION

LOW BIDS AND CONTRACTS

▲ **BRITISH COLUMBIA**—B. C. Government, Douglas Bldg., Victoria,

Osberg Constr. Co. Ltd., 626 West Pender St., Vancouver, B. C., LB **$1,717,704,** reconstr. 9.03 mi. Golden-Yoho Park Boundary Section of Trans-Canada hy. Bids Sept. 22. CD 9/18.

Smith & Wilson Ltd., 1267 Richards St., Vancouver, B. C., CA, **$586,000,** shed reconstruction, La Pointe Pier, VANCOUVER, B. C. Govt. of Canada, National Harbor Bd., West Block, Ottawa, Ont. Bids Oct. 22. CD 10/29, under LB.

ONTARIO—Dpt. Highways, Parliament Bldg., Toronto,

Carter Constr. Co. Ltd., 419 Cherry St., Toronto, Ont. CA, **$750,000.** five bridges Toronto By-Pass Hy., Humber River to Hy. 27, Toronto. Bids Oct. 17. CD 10/3.

▲ **ONTARIO**—Dpt. Highways, Parliament Bldg., Toronto,

McNamar Constr. Co. Ltd., 42 Industrial St., Leasdie, Ont. CA **$408,000.** hot mix paving, grading 11 mi. Hy. 26, Meaford to Thornbury, Meaford;

Miller-Paving Ltd., 56 Blake St., Toronto, Ont. CA **$280,-000.** grading, structures 8 mi. from Brechin north Hy. 69, Brechin;

Tomlinson Constr. Co., Ltd., The Queensway St., Toronto, Ont. CA **$350,000.** grading, structures 9 mi. Mono Mills on Hy. 9 to Hy. 10, Mono Mills;

Monarch Engineering Ltd., 56 Blake St., Toronto, Ont. CA **$2,112,000.** grading, structures Toronto-By Pass Hy. dual hy. 9.2 mi. Yonge St., Toronto;

Malvern Constr. Co., Box 40, Station J, Toronto, Ont. CA **$226,895.** grading, structures 5.4 mi. new hy. from Hy. 35 near Port Hope in Twp. of Clark Esst, Port Hope.

Therrien Constr. Co. Ltd., 200 Bay St., Toronto, Ont. CA **$490,000.** grading, structures 8 mi. Hy. 60 from Washago South, Washago. Grand total $3,866,895. Bids Oct. 17, awarded Oct. 22. CD 10/3.

Richardson Constr. Co., Ltd., 68 Yonge St., Toronto, Ont. CA **$544,664,** est. $1,000,000. bridge at Sherbourne and Bloor Sts. across Rosedale Ravine, less approaches and moving utilities, TORONTO, ONT. City, A. A. Lamport, mayor, City Hall, Toronto, Ont. Bids Sept. 30. CD 9/2.

BUILDINGS

LOW BIDS AND CONTRACTS

Whitsell Constr. Co. Ltd., 5600 Dalhousie Rd., Vancouver, B. C., CA, **$500,000,** 3 story, rein.-con. MEDICAL OFFICE, VANCOUVER, B. C. C. A. Copp c/o 5600 Dalhousie Rd., Vancouver, B. C. W. K. Noppe, 1186 Nicola St., Vancouver, archt. Awarded Oct. 22.

Putherbough Constr. Co., 320 Colborne St., London, Ont. CA Est. **$500,000.** 75x163 ft. brick, steel, stone, concrete CHURCH, LONDON, ONT. Talbot Street Baptist Church, 1014 Harrison Ave., London, Ont. Awarded Oct. 25. CD 4/23.

▲ **On-Site Constr., Ltd.,** 4425 Beaconsfield Ave., Montreal, Que. Own Forces. **$2,500,000.** 300 HOUSES in McAuley Gardens area, PRESCOTT, ONT.

D. Boileau Ltd., 805 Beaumont Ave., Montreal, Que. CA **$518,492,** est. $500,000. 2 story, 80x230 ft., rein.-con., brick, stone SCHOOL for Parish of St. Malachy on Clamranald Ave., MONTREAL, QUE. Catholic School, 117 E. Ste. Catherine St., Montreal, Que. Bids Oct. 21. CD 9/24.

▲ **Smith Bros. & Wilson Ltd.,** 104 Dominion Bank Bldg., Regina, Sask., CA, **$1,844,167,** 3 story, rein.-con. brick, granite and stone OFFICE and EXCHANGE BUILDING, REGINA, SASK. Saskatchewan Government Telephones, 2350 Albert St., Regina, Sask. Bids Sept. 30, awarded Oct. 14. CD 9/11.

U. S. POSSESSIONS

BIDS ASKED—BUILDINGS

▲† **Virgin Islands, St. Thomas and St. Croix**—SCHOOLS—B.A. 1/12—Office of Territories, Dpt. Interior, Lester M. Marx, Contr. Officer-Dist. Engr. for V.I. P.O. Box 479, St. Thomas, V. I., Proj. 53-105, Group I, St. Thomas, Virgin Islands, Sect. A, Charlotte Amalie High School, Sect. B, James Madison Elementary School addns., alterations, Robert Merrick and James Monroe Elementary Schools alterations, addns., Proj. 53-104, Group II, St. Croix, Virgin Islands, Sect. A, Christramsted Consolidated School, Sect. B, La Vallee Elementary School alterations, addns. Approx. $1,000,000. Plans deposit $75. M. A. Dyer Co., 24 School St., Boston, Mass., archts. CD 9/16, under LB.

AMERICANS ABROAD

HEAVY CONSTRUCTION

LOW BIDS AND CONTRACTS

▲† **Construction Management Engineering Associates,** 140 Cedar St., New York 6, N. Y. (Raymond Concrete Pile, 140 Cedar St., New York, N. Y., Brown & Root, Inc., 4100 Clinton Dr., Houston, Tex., Walsh Constr. Co., 1 E. 43 St., New York 17, N. Y.) CA **$3,824,000** will supervise construction for 1 year air bases in FRANCE, for Air Force. Firm will make technical review and analysis of base construction, plans, specifications and recommendations for imprvs., prepare cost estimates.

(Proposal Advertisements see pp. 123 & 124)

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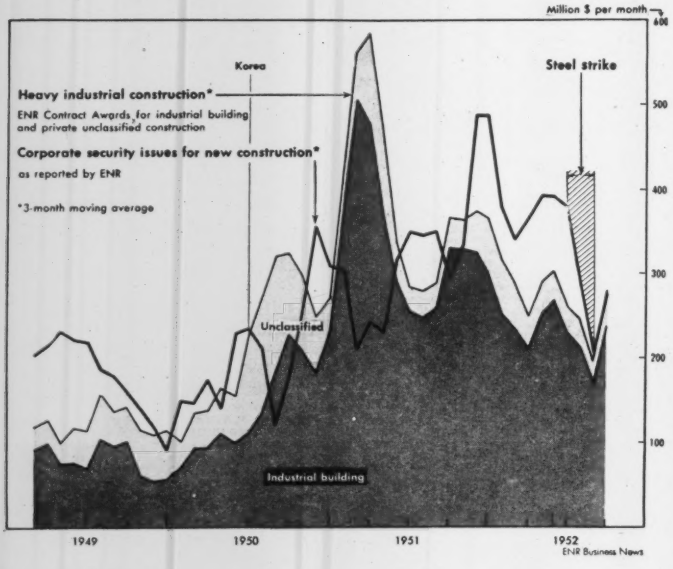


Industrial building awards climb; 1952 will be second highest year

Industrial building contract awards, as reported by ENGINEERING NEWS-RECORD, shot back up in October to $365 million, the biggest month since October, 1950.

This volume is more than three times the low in September, following the steel strike.

This year-end rise means that 1952 will be the second highest year in industrial building. Although contract volume is running 35% behind last year's record volume, 1952 awards to date are already 41% above the total for all of 1950, which was the previous runner-up.

• **Future prospects good**—Industrial building should continue at a high rate next year. There are two reasons: the all-time high backlog of proposed industrial projects, and the large volume of construction money from corporate security sales.

The backlog now tops $10.5 billion with new projects pouring in with rising momentum. They came in at the rate of $0.6 billion the first quarter, $0.9 billion the second quarter, and $1.4 billion during the third quarter.

However, the steel strike forced some projects into the backlog instead of into contracts. While almost $3 billion poured in, $1.85 billion came out of the backlog as projects went under construction contract.

The second forerunner of increased industrial activity is the sharp increase in sales of corporate securties in October.

The accompanying chart shows how closely sales of corporate securities for construction foretell the trend in contract awards. The large volume of financing in October reversed the sharp downtrend during the steel strike.

• **Process industries lead**—Contributing most to ENR's industrial building contract awards for the first nine months of 1952 are the process industries with $837 million.

Public utilities are second, and metal refining and rolling plants are third highest. Machinery manufacturing plants are also being built in large volume.

The process industries, including chemicals and primary aluminum producers, came nearest to maintaining the record 1951 volume. But even this group was 21% under a year ago.

Metal refining and rolling plants, one of the 1951 leaders, showed a 66% decline in awards during the first 10 months of this year.

The Western and Southern states are leading the nation in new industrial plants.

The region west of the Mississippi, sparked by Texas, leads all other regions. That is the only section of the country that has more industrial contracts this year than last. So far this year, contract volume is running 4% ahead of 1951.

The Middle West is second this year in industrial awards despite a 39% drop in total contracts. The South is third with 35% less industrial building this year than last.

In the Far West, volume is down 56% but it is in the Middle Atlantic Region that the greatest cutback has occurred in industrial building. In that region, industrial volume is 66% behind last year.

New England is only 7% behind last year's record level.

The current trend of industrial building increasing in the West and South also shows up in the backlog.

West of the Mississippi and the Middle West together account for about $1 billion, or 86% of the total $1.15 billion increase in the ENR backlog of industrial building during the first nine months of this year.

The South's industrial backlog has increased, but not as much as that of the West. The industrial building backlog also gained in the Far West.

Middle Atlantic states show the smallest gain in industrial backlog.

New England's reserve of proposed industrial building dropped—due mainly to the loss of the proposed New London, Conn., steel mill.

Tax benefits proposed for apartment builders

James M. Henderson, director of the Office of Rent Stabilization, said last week that a plan for direct tax benefits for builders of rental housing might attract more private capital into that market.

Henderson proposed a method of tax benefits similar to the government's accelerated amortization plan to build up the nation's industrial plant.

Under the system, a large part of the construction cost of an apartment project would be eligible for amortization in five years, instead of the normal 20-25 years.

NCA business formula: Get together, exchange information, get it settled

To paraphrase an old catchline—contractors seldom tell their competitors anything about their business. Macy's, in a word, doesn't often tell Gimbel's.

So, when they do—and what's more, when they actually go to work for each other—that's news.

And that's almost exactly what the members of the National Constructors Association have been doing. Not only do they tell each other what they're doing, they sit down together to discuss mutual problems, and work and travel in the interest of the group. 20 NCA members figured their combined manhour losses through jurisdictional disputes at 200,000. That kind of a loss is too serious to stand, so they went to work on it. In the first six months of 1952, they had cut that loss by half—to 100,000 hours.

What such a process can do is this:

In the last six months of 1951, the

—The Cover—

The three men so earnestly checking papers on ENR's cover this week have good reason for looking so serious—they are the heads of NCA's Labor Committee, most active of the organization's subdivisions.

Left to right they are: J. F. O'Neill, of Chemical Construction Co., co-chairman; L. T. Gardiner, of Fluor Corp., Ltd., Chairman; and R. C. Siciliano, of Procon, Inc., co-chairman.

• How it works—Although it has only 20 members—and all of them in the field of construction for the chemical, steel and petroleum industries—NCA represents no small-potato part of the construction industry. This year, its members will do a total volume of about $2 billion.

Key to NCA's success is in the largely informal exchange of information. It works this way:

Every four months, members send in to New York headquarters a list of jobs, planned or underway, for the next quarter. The list is as complete as possible, with location, owner, start and completion date, and representatives.

Almost certainly the list will develop the fact that a number of members will be working within the same area during the year—perhaps not concurrently.

By telephone, telegraph, lunchtable conversation or otherwise, the members check, find out the situation in the area, who's going down, what problems will come up. Then they may delegate any of the firms concerned to act for the group—or representatives of each of the organizations may go in a group to settle as many job problems as possible before work actually begins.

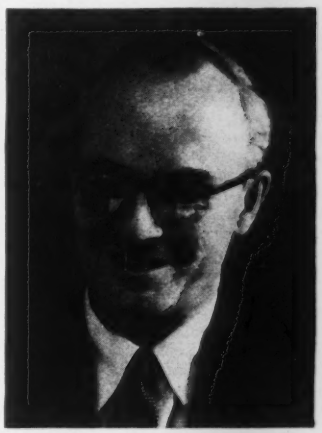
Principal matters for discussion almost always will involve labor—although access to jobs, transportation, safety and many other matters may come up.

• Not formal—As a rule, NCA members work through existing employer-labor negotiating setups where they exist. But, because of the nature of their construction specialty, much of their work is done in areas where no such organizations exist—where few union organizations exist either, locally.

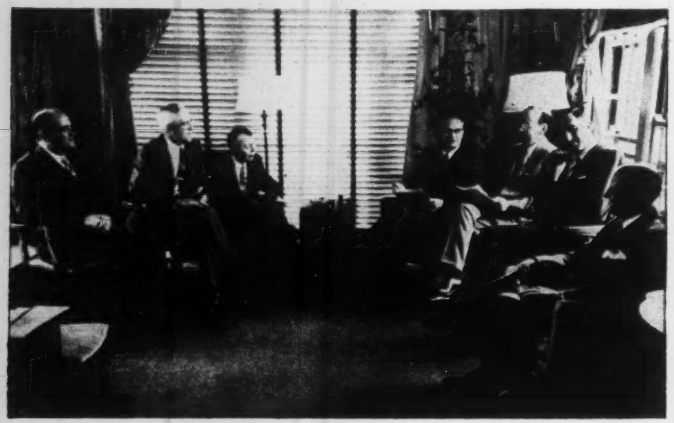
While the association itself does not sign agreements, it does negotiate nationally and regionally on behalf of its members, who then sign the agreements if they so desire. Members' national agreements cover their local working relations with regard to wages and working conditions.

What needs to be settled are questions of inter-union jurisdiction. And in these matters—by a process that J. J. O'Donnell of Lummus Co., NCA president, calls "preventive maintenance"—NCA actually sits as an interested third party while labor works out its own settlements.

"What happens," says O'Donnell, "is simple enough. We haven't started our work in the area. This is the time to settle questions about who picks up what piece of equipment, who moves what to where



PRESIDENT—J. J. O'Donnell of The Lummus Co., New York City, is top man of National Constructors Association.



MORE INFORMATION—NCA's executive committee gathers for an informal hotel room conference. J. J. O'Donnell (fourth from left), and C. D. Haxby (on O'Donnell's left), president and vice-president of the organization, listen while S. F. Spangler (second from left) makes a point. Others are: C. B. Whyte, E. D. Hoekstra, F. R. Stevens and J. S. Fluor. (Photos by Mike Shea)

around the job, and the like. The unions are as glad as we are to work these things out.

"When everything has been ironed out among the unions, we're satisfied. Work can begin and keep going because at least the main points of dispute have been settled, and we—as well as labor—abide by the settlement."

Of course, other matters can and do come up, once the jobs have started. The way they're settled, usually is for NCA members' representatives on the jobs to get together informally over a lunch table to discuss the matters, take them up with labor leaders on the same informal basis and get them settled.

• **Genesis**—The organization had its beginning in late 1946 and early 1947, when 14 of the big contractors who now are part of NCA decided that existing contractors' groups weren't quite fully serving the needs of this highly-specialized branch of the construction industry.

They held a number of informal meetings, finally consummating their efforts with formal organization of NCA in April, 1947. They limited membership to national general contractors "engaged in building oil refineries, steel and chemical plants, and related construction work." Since the original formation, four new full members and two associates have been added to the roster.

NCA's formal staff consists of Secretary-Treasurer Charles B. Bronson, and two assistants, housed in modest offices over the Chemists' Club on East 41st Street in New York City.

All other offices and all active field work for the organization are filled by representatives of member firms, who work without compensation, and who even pay their own transportation and other expenses to the frequent committee and general meetings of the group.

• **Activities**—The executive committee and the labor committee, most active of the group's subdivisions, meet bimonthly, and oftener if need be. Other committees include: Welfare, safety and foreign work, these last meeting about three times a year.

In addition, NCA has five regional labor committee chairmen, who attend all meetings in their areas, to represent the group as a whole and act as coordinators and passers-on of information.

The good will that has been established between NCA and organized labor is apparent in a recent speech made by O'Donnell before the annual convention of the Building and Construction Trades Department, AFL. Said the NCA leader: "Let us continue to work together in our effort to reduce costs, increase productivity and share the benefits of full employment for ourselves and those about us."

• **Membership**—It is an impressive roster, this membership of NCA. It includes: The Bechtel Corp., San Francisco; C. F. Braun & Co., Alhambra, Calif.; Chemical Construction Corp., N. Y.; Day & Zimmerman, Co., Inc., Cleveland; The Fluor Corp., Los Angeles; Ford Bacon & Davis Construction Corp., Monroe, La.; Girdler Corp., Louisville, Ky.

Also: Foster Wheeler Corp., and Graver Construction Co., New York City; M. W. Kellogg Co., New York; Kopper Co., Pittsburgh; The Lummus Co., New York City (whose J. J. O'Donnell is NCA president); Arthur G. McKee & Co., Cleveland; J. F. Pritchard & Co., Kansas City, Mo.; Procon, Inc., Chicago; Rust Engineering Co., Pittsburgh (whose C. D. Haxby is NCA vice-president); Stone & Webster Engineering Corp., Boston. The two associate members are Babcock & Wilcox Co., Barberton, Ohio; and Universal Oil Products Co., Chicago.

Construction costs increase slightly

Construction costs were held to small increases this month.

ENGINEERING NEWS-RECORD's Construction Cost Index for 20 cities is 588.61 (1913 equals 100) in November, only a fraction of a point above last month.

The ENR Building Cost Index is 426.04 (1913 equals 100), 9.3% higher than in October.

Lumber prices, which were up in some cities and down in others, averaged out to contribute the slight rise in construction costs.

That, plus higher wages for skilled trades in four cities, was responsible for the increase in building costs.

Costs should feel little pressure from new wage demands until next spring. Wage contracts for common labor have been signed already in the 20 key cities in 1952. And for skilled workers, wage negotiations are currently underway in only two of the 20 cities.

AEC to open bids Jan. 6 on New York project

The Atomic Energy Commission will open bids Jan. 6 at the Schenectady, N. Y. operations office for construction of eight auixiliary buildings at the Knolls Atomic Power Laboratory, West Milton, N. Y.

AEC's "informal" estimate is $4 million to $8 million, with construction accounting for about half of the total, and mechanical process equipment the balance.

Completion date of the project is June 1, 1954, the AEC disclosed.

Clay pipe industry faces buyers' market

The clay pipe industry, which has expanded 50% in the past five years, is entering a buyers' market, D. M. Strickland, president of the National Clay Pipe Manufacturers Association, told producers at a meeting in New York last week.

Strickland said a national research program is underway to find new uses for the product.

Under study are plans for use of pipe in 4-ft lengths, instead of the customary 2-ft lengths, and for use of mechanical joints.

By reducing the number of joints by one-half, the 4-ft lengths would almost halve labor costs.

Saving permits seawall extension

The Galveston County seawall extension, in Galveston, Tex., will gain an additional 168.5 ft at no extra cost, according to the Corps of Engineers.

Approximately $85,000 had been set aside for engineering contingencies in the original contract which provided for expenditure of $2.5 million for 5,151.5 ft of seawall.

The plans, as developed by the Engineers, needed no further revisions and no engineering difficulties developed. So, the $85,000 was used for additional seawall construction.

Briefs . . .

• **Lots of work**—Employment in contract construction declined slightly in September as the seasonal peak passed. But the 2,700,000 total was about equal to the all-time record for the month reached a year ago, the Bureau of Labor Statistics reported.

• **Costs steady**—The Smith, Hinchman & Grylls Building Cost Index for October remained unchanged from the September reading of 277 (1926 = 100).

• **Sales up 20%**—Allis-Chalmers Manufacturing Co. reported net sales of $384.6 million during the first nine months of this year. That was 20% higher than sales in the corresponding 1951 period.

• **Index up again**—American Appraisal Co.'s Construction Cost Index rose 11 points during the third quarter to a new reading of 561 (1913 equals 100). During the first three quarters of this year, the index rose a total of 22 points, or 4%.

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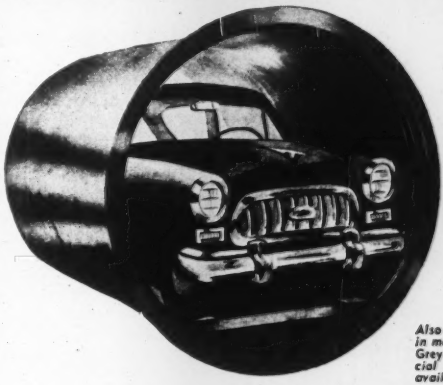

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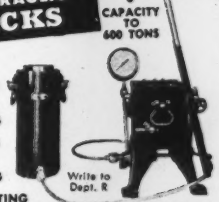

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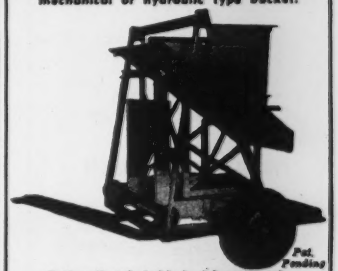

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U. S. builders to supervise French airbase construction

The U. S. Air Force last week announced that it had called in three American contractors to help correct deficiencies in the construction of airbases in France. Under a contract awarded the three-firm group, the joint organization will help the Air Force to speed and supervise construction of the bases by the French.

Most of the Air Force work in France is classified, and not much has been said about it in this country. But people in France have voiced considerable criticism of the first bases constructed in the program. Runway pavements have not stood up even under B-26 loadings, and they are supposed to take much heavier planes.

By agreement with the French government, all work on USAF installations in France is performed by French contractors. According to the Air Force, the French government, through Travaux Publics and Ponts et Chaussees, has designed and built airfield pavements on six bases. These are the bases, it is believed, which received strongest criticism.

All Air Force bases in France are built under NATO commitments. The eventual NATO program calls for more than 150 bases on the continent, with probably half of them in France—or at least west of the Rhine. The nation using each base pays for the construction work, under direct agreement with the French government.

At present the Air Force is believed to have some nine or ten such bases under commitment. The three-contractor group, known as Construction Management and Engineering Associates, will assist in the supervision of these bases. Members of the group are the Raymond Concrete Pile Co., and the Walsh Construction Co. of New York and Brown and Root, Inc., of Houston.

Earlier bases were built by the five Brussels Pact powers; work at ground level or below being paid for by those powers and work above ground by the country that would use the field. It is the runway pavement at three of these bases (Chaumont, Tonl-Rosiere and Laon-Convron) that has been criticized as not fit for USAF use without rebuilding. French officials point out that much of the work had to be done in the fall under bad weather conditions and that the faults can be corrected easily.

Today design of all USAF construction work in France is in the hands of American architect-engineers who

Activity This Week

As reported to ENR (in millions of dollars)

Contracts by type of work

	This Week*	Cumulative 45 wks 1952	1951	% chge
Waterworks.	$6.2	$195.1	$180.0	+8
Sewerage ...	6.8	258.2	284.6	−9
Bridges	5.9	351.1	283.5	+24
Highways ..	16.0	1,295.3	1,039.2	+25
Earthwork, waterways .	2.2	426.2	446.6	−5
Buildings:				
Public	26.6	4,063.7	1,898.9	+114
Housg., pub.	1.2	554.0	583.1	−5
Housg., priv.	53.6	2,590.1	1,722.9	+50
Commercial	11.5	576.4	544.1	+6
Industrial..	51.0	2,419.0	3,664.4	−34
Unclassified.	14.5	1,168.7	1,473.4	−21
Total	**$195.5**	**$13,897.8**	**$12,120.7**	**+15**

* 4-day week

NOTE: Minimum size projects included are: Waterworks and waterway projects, $34,000; other public works, $60,000; industrial buildings, $82,000; other buildings, $300,000.

ENR indexes		Base Year = 100 1913	1926	1949
Constr. cost.	Nov.	588.61	282.94	123.39
	Oct.	588.43	282.86	123.27
Bldg. cost...	Nov.	426.04	230.30	121.10
	Oct.	424.77	229.62	120.70
Volume	Oct.	340	219	156

work in Paris. So far, design work has been given to seven firms.

• **Engineers listed**—Four of them are combined in a joint group known as Atlantic Engineers. This combination is converting Air Force standard plans to the metric system to conform with French design and construction practice. It is also performing the design work for the base complex at the Mutual Defense Assistance Program air depot near Chateauroux.

Member firms in Atlantic Engineers are Ammann & Whitney, of New York; Guy B. Panero, of New York and Washington; Capitol Engineering Corp., of Dillsburg, Pa., and Sherlock, Smith and Adams, Inc., of Montgomery, Ala.

Other architect-engineers working on French base designs for the Air Force are these: (1) a combination of Frank Grad & Sons and Seelye, Stevenson Value and Knecht of Newark, N. J. and New York; (2) Richard Hawley Cutting Associates of Cleveland; and (3) a combination of Walker and Poor, architects, and the engineering firms of Parsons, Brinckerhoff, Hall and Macdonald, both of New York.

OPS raises price of reinforcing bars

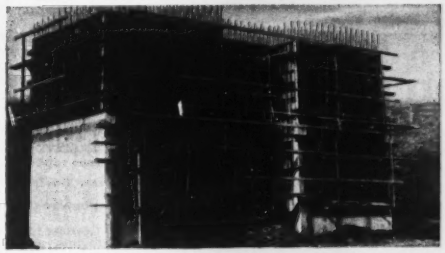
Ceiling prices of concrete reinforcing bars and materials have been raised slightly as the result of a new regulation issued last month.

The order (CPR 174) was designed to give relief to sellers of reinforcing bars and reinforcing materials who have been forced by shortages to get their stock from new and distant sources at higher freight costs.

Under General Ceiling Price Regulation, sellers were limited to the highest price charged between Dec. 19, 1950 and Jan. 25, 1951—plus the Capehart adjustments for increased labor and materials costs. Now the sellers can use either of two pricing methods:

(1) add a 33% markup to the average cost of bars—then tack on average in- and out-bound transportation costs. Average bar cost must be computed monthly from preceding month's invoices. This method is designed for use by non-integrated or independent sellers who buy bars and cut and bend them in their own warehouses.

(2) Integrated preparers—who produce their own bars—can add outbound freight charges to their Jan. 25, 1951, price as well as the dollars and cents increases granted to producers of bar for other than reinforcing purposes.



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Construction posts record high in '52

Construction contracts have just set an all-time record for dollar volume in any one year.

Contract awards for heavy construction, as reported by ENGINEERING NEWS-RECORD, topped $13.7 billion for the first 10 months of this year, slightly more than the previous 12-month record of $13.6 billion.

Public non-residential building has been a major factor in the good showing in 1952, running 113% ahead of 1951. Of the $4 billion in new contracts, Atomic Energy Commission projects accounted for the largest part, more than $2.3 billion.

Highway and bridge construction awards have also set a fast pace. Awards are running 25% and 22%, higher than last year.

For the first 10 months of this year, highway contracts piled up 1,280 million, topping the former 12-month high of $1,268 million in 1950.

Still another record may be broken in 1952 because bridge construction is currently 6% ahead of 1950, the previous record year for this type of construction.

Other types of public construction are running behind last year with the exception of waterworks which show a 6% gain over the corresponding period in '51.

Sewerage contracts are 8% behind last year, due mainly to a poor start earlier in '52. But in recent months sewerage work has picked up and is closing the gap between contract volume in '52 and '51.

Earthworks and waterways are running 5% under the '51 level and public housing is down 6%. The biggest drop has been in public unclassified work which so far in '52 is 20% behind last year. The main reason is the small volume of new federal airport construction this year.

Private construction is also doing well. Mass housing is still strong, but is still under the record 1950 figure. In 10 months, it has passed the $2.5-billion mark, only 9% behind the corresponding period in 1950.

Other private construction—industrial and commercial building—will post the second highest years on record.

Where construction dollars are going

(Based on contract awards reported by *Engineering News-Record* and the *Construction Daily*—first 10 months of 1952)

Region	1952 Contracts (millions)	% of total	1951 Contracts (millions)	% of total
South	$3,325	24.3	$2,449	20.8
Middle West	3,073	22.1	2,067	17.6
West of the Miss.	3,026	22.1	2,840	24.2
Middle Atlantic	2,186	16.0	2,177	18.5
Far West	1,542	11.3	1,674	14.2
New England	549	4.0	545	4.6
U. S. total	**$13,702**	**100.0**	**$11,751**	**100.0**

• **South takes lead**—The South may capture first place in heavy construction awards this year, after working its way up from second place in 1951 and third in 1950.

The Southern states have posted a total of $3.3 billion in new contracts in 1952.

The Middle West is also coming along fast this year and, as in the South, atomic energy projects have been a major factor. A total of $3.1 billion in awards makes this region second highest in contract volume in '52, compared to fourth position in 1949-51.

The table above shows how contract volume has surged ahead in the South, the Middle West and the area west of the Mississippi River.

ENGINEERING CONSTRUCTION CONTRACTS—OCTOBER, 1952

ENGINEERING NEWS-RECORD *reports continental U. S. Construction projects of the following minimum costs—Waterworks, excavation, drainage and irrigation,* $34,000; *other public works,* $60,000; *industrial buildings,* $82,000; *other buildings,* $300,000

Five Weeks—Thousands of Dollars (000 Omitted)

	October, 1952							U. S. Cumulative Ten Months		% Change	Canada
	New England	Middle Atlantic	South	Mid-West	West of Mississippi	Far West	Total U. S.	1952 (44 Weeks)	1951 (43 Weeks)	'51 to '52 Avg. Week	October 1952
Public Works											
Waterworks	803	1,387	3,722	3,211	7,918	2,589	**19,630**	**188,853**	173,869	+ 6	1,110
Sewerage	495	7,101	4,866	4,653	8,615	3,988	**29,718**	**251,600**	269,969	− 9	2,053
Bridges	11,542	16,716	4,235	5,261	8,850	7,952	**54,556**	**329,072**	263,565	+22	1,207
Earthwork and drainage	197	251	3,604	437	17,387	23,732	**45,808**	**424,136**	436,387	− 5	121,091
Streets and roads	8,011	21,419	17,913	18,458	33,752	15,714	**115,267**	**1,279,670**	1,001,093	+25	1,527
Public buildings, residential	8,081	21,854	2,159	754	7,730	4,616	**45,194**	**552,456**	576,951	− 6	3,727
Other public buildings	7,483	64,109	46,703	51,985	31,923	56,218	**258,421**	**4,037,298**	1,853,117	+113	4,446
Unclassified	8,585	20,334	18,241	6,719	23,732	12,172	**89,783**	**720,912**	878,738	−20	40,277
Total public	**45,197**	**153,171**	**101,443**	**91,478**	**140,107**	**126,981**	**658,377**	**7,783,997**	**5,453,689**	**+39**	**175,438**
Federal government (included in above classifications)	8,458	28,137	47,500	25,236	55,509	79,228	**244,068**	**4,219,482**	2,037,658	+102	46,024
Private											
Bridges	.....	.....	.....	390	.....	.....	**390**	**15,569**	11,725	+30	.....
Industrial buildings	33,970	32,567	74,282	29,863	177,046	17,607	**365,335**	**2,368,209**	3,558,466	−35	12,163
Com'l. buildings, residential	4,509	101,418	54,015	33,145	49,453	15,281	**257,812**	**2,536,499**	1,626,143	+52	12,987
Other commercial buildings	5,628	17,143	9,799	30,078	29,415	2,386	**94,449**	**564,913**	532,114	+ 4	11,282
Unclassified	200	.....	22,115	2,670	44,135	898	**70,018**	**433,202**	569,278	−26	1,775
Total private	**44,298**	**151,128**	**160,211**	**96,146**	**300,049**	**36,172**	**788,004**	**5,918,392**	**6,297,726**	**− 8**	**38,207**
Total Engineering Construction:											
October, 1952—5 weeks	**89,495**	**304,299**	**261,654**	**187,624**	**440,156**	**163,153**	**1,446,381**	.....	.....	.....	**213,645**
September, 1952—4 weeks	55,817	153,299	130,951	170,138	203,838	238,175	**952,218**	.....	.....	.....	72,129
October, 1951—4 weeks	37,669	199,631	210,680	206,490	213,861	158,642	**1,026,973**	.....	.....	.....	58,054
Ten Months—1952	**549,065**	**2,186,170**	**3,325,281**	**3,073,086**	**3,026,316**	**1,542,471**	.....	**13,702,389**	.....	**+14**	**1,086,893**
Ten Months—1951	544,697	2,176,953	2,448,664	2,066,775	2,840,469	1,673,857	.....	.....	11,751,413	.....	1,030,383
% Change '51 to '52	−1	−2	+33	+45	+4	−10	.....	.....	.....	.....	+0.2

OFFICIAL PROPOSALS

APPEAR HERE EACH THURSDAY. PROPOSAL ADVERTISEMENTS ACCEPTED UP TO 10:30 A.M. FRIDAY FOR THE ISSUE DATED THE FOLLOWING THURSDAY.

Bids: December 11, 1952

THE ALTOONA CITY AUTHORITY
ALTOONA, PENNSYLVANIA

Sealed bids for the construction of the Westerly Sewage Treatment Works in the City of Altoona, Blair County, Pennsylvania, will be received by the Altoona City Authority, in the City Hall, at Altoona, Blair County, Pennsylvania, until 10 A.M., E.S.T., Dec. 11, 1952, and then publicly opened and read aloud.

The work will be divided into five contracts designated as follows:

CONTRACT NO. 10—STRUCTURAL WORK
CONTRACT NO. 11—MECHANICAL WORK
CONTRACT NO. 12—ELECTRICAL WORK
CONTRACT NO. 13—HEATING WORK
CONTRACT NO. 14—PLUMBING WORK

The work may be awarded to one contractor under Contracts Nos. 10 and 11 in combination.

Information for Bidders, Form of Bid, Specifications and Form of Contract may be examined at the Office of the City Engineer in the City Hall, Altoona, Pennsylvania, or at the office of Albright & Friel Inc., Consulting Engineers, 121 South Broad Street, Philadelphia 7, Pennsylvania, and copies thereof may be obtained at either office upon a deposit of $50.00 for each set of documents for each contract. If the documents are returned in good condition within five days after the opening of bids, the full amount of the deposit for one set will be returned to each actual bidder and other deposits will be refunded with a deduction of $25.00 to defray the actual cost of reproduction. If the documents are not returned within the time stated, the entire amount of deposit will be forfeited.

A certified check or bid bond drawn to the order of the Altoona City Authority equal to five percent of the amount of bid must be submitted with the proposal.

The proposal must be sealed and marked "SEALED PROPOSAL FOR CONSTRUCTION OF THE WESTERLY SEWAGE TREATMENT WORKS" addressed to "MR. J. H. DILLEN, SECRETARY OF ALTOONA CITY AUTHORITY, ALTOONA, PENNSYLVANIA", and the contract or contracts under which the proposal is being submitted must also be shown thereon.

The Altoona City Authority reserves the right to reject any or all bids or waive any informality, and to award each contract to cover the construction of the additions to the Westerly Sewage Treatment Plant, as may be deemed by the Altoona City Authority to be to their best interests.

No bidder may withdraw his bid within forty-five (45) days after the actual date of the opening thereof.

The National Production Authority has assigned a DO-T-8 rating and a T-8 Allotment to this project.

Date: October 20, 1952

J. H. DILLEN, SECRETARY,
ALTOONA CITY AUTHORITY

Bids: December 4, 1952

DEPARTMENT OF HIGHWAYS
ULSTER COUNTY, NEW YORK
TWO STEEL GIRDER BRIDGES
Kingston, New York

Sealed proposals will be received by the Board of Supervisors of the County of Ulster, New York at the office of Robert A. Snyder, Clerk, Court House, Kingston, New York, until 3:00 P.M. on the 4th day of December, 1952, at which time and place they will be publicly opened and read, for the furnishing of all labor and materials necessary in the construction of a steel girder bridge, complete with concrete abutments on timber piles, and known as the Holden Bridge, designated as County Bridge No. 103, spanning the Esopus Creek in the Town of Shandaken, Ulster County, New York.

Sealed proposals will also be received by the said clerk at the same time and date as mentioned above for the construction of a steel girder bridge, complete with concrete abutments on timber piles, known as the Donahue Bridge, and designated as County Bridge No. 160, spanning the Esopus Creek in the Town of Shandaken, Ulster County, New York.

Plans and specifications may be seen in the office of the Clerk of the Board of Supervisors, Court House, Kingston, New York, and copies of same may be secured upon application to James F. Loughran, County Superintendent of Highways, 74 John Street, Kingston, New York, upon the deposit of twenty-five dollars ($25.00), which sum will be refunded if the plans and specifications are returned in good condition by bidders within twenty (20) days of bids having been received and acted upon by the Board of Supervisors, and fifteen dollars ($15.00) of the deposit will be so returned to non-bidders.

A certified check upon a National Bank, State Bank, or Trust Company in the sum of 10% of the amount of the bid, made payable to the Treasurer of Ulster County, New York, must accompany the bid as a guarantee that the contract will be entered into if awarded.

A labor and material bond will also be required.

A faithful performance bond in the sum of one hundred per cent (100%) of the contract price will be required.

The Board of Supervisors of Ulster County, New York, reserves the right to reject any or all bids as it may deem to be to the best interests of the County of Ulster, New York.

JAMES F. LOUGHRAN,
COUNTY SUPERINTENDENT OF HIGHWAYS

Dated: October 28, 1952.

Bids: November 20, 1952

Furnishing and Erection of a Sand Bunker With Elevator at New York International Airport

THE PORT OF NEW YORK AUTHORITY
CONTRACT O&M-167
PROPOSAL NO. 956

Sealed proposals for furnishing all labor materials and equipment necessary for the furnishing and erection of a sand bunker with elevator at New York International Airport, Queens, Long Island, New York will be received at the office of the Director of Purchase of The Port of New York Authority, Room 1402, 111 8th Ave., New York 11, until 11 A.M. Thursday, November 20, 1952, at which time and place said proposals will be publicly opened and read. Contract documents may be seen at the office of the Department of Purchase & Administrative Services, Room 1402, and copies will be furnished upon deposit of $10. per set. Deposit must be delivered to Treasury, Room 1001, where a receipt in duplicate will be issued. A copy of the receipt should then be delivered to the Department of Purchase & Administrative Services, Room 1402, and you will be furnished with the contract documents. The deposit will be remitted if the documents are returned in good condition, not later than 30 days after the bid opening date.

THE PORT OF NEW YORK AUTHORITY
Howard S. Cullman, Chairman

New York, October 28, 1952

Bids: December 2, 1952

Building No. 141

THE PORT OF NEW YORK AUTHORITY
PORT NEWARK
CONTRACT PN-200.024

Sealed proposals for the construction of Building No. 141 at Port Newark will be received at the office of the Chief Engineer of The Port of New York Authority, Room 1100, 111 8th Ave., New York 11, until 2:45 P.M. Tuesday, December 2, 1952, at which time and place said proposals will be opened and read.

Contract documents may be seen at the office of the Engineer of Materials, Room 1110, and copies will be furnished upon deposit of $25. per set. Deposit to be delivered to the Treasury Department, Room 1001, where a receipt in duplicate will be issued. A copy of the receipt should then be delivered to the Engineer of Materials, who will furnish the contract documents. The deposit will be remitted if the documents are returned in good condition, not later than 30 days after the opening of proposals.

THE PORT OF NEW YORK AUTHORITY
Howard S. Cullman, Chairman

New York, November 6, 1952

Bids: November 13, 1952

Sale of Steel Water Tank

NOTICE TO BIDDERS

Sealed Proposals will be solicited until 10:00 A.M. on November 13, 1952, in the Office of the City Auditor and Clerk of Fort Lauderdale, Florida, for the sale of one 55,000 Gallon Elevated Steel Water Tank, located at East Broward Boulevard and Victoria Park Road, Fort Lauderdale, Florida.

Proposal blanks and terms of the sale may be obtained from the Office of the City Engineer.

A Certified or Cashier's check for the full sale price, made payable to the City of Fort Lauderdale, or cash, shall accompany each proposal.

The City of Fort Lauderdale reserves the right to reject any or all bids.

H. M. Link
City Manager

U. S. Government

St. Paul District, Corps of Engineers, U. S. Army, 1217 U. S. Post Office and Custom House, St. Paul 1, Minnesota. Sealed bids will be received at this office until 2:00 P.M., C.S.T., 19 November 1952, and then publicly opened, for Channel Improvement on Otter Tail River, Minnesota.

Date: October 20, 1952

INVITATION TO BID

Sealed bids will be received in the office of Engineering and Construction Director, Panama Canal Company, Balboa Heights, Canal Zone until 10:00 A.M., E.S.T., December 9, 1952, for furnishing all plant, tools, equipment materials, labor, and services, and performing all work for the construction of 22 masonry type quarters, buildings and appurtenances at Balboa, Canal Zone and 128 masonry and off-the-ground type buildings at Corozal Townsite Construction, Canal Zone, for Panama Canal Company.

Copies of specifications, drawings, and bidding papers may be obtained from Purchasing Agent, Panama Canal Company, 24 State Street, New York 4, N. Y. Requests should be accompanied by a $40.00 deposit for each set of combined specifications with drawings. Deposit to be in form of a United States money order or a certified check made payable to "Treasurer, Panama Canal Company".

Specifications and drawings may be inspected at the following places:

Panama Canal Company, 411 10th Street, N. W., Washington 25, D. C.

Office of the District Engineer, U. S. Engineer's Office, 180 New Montgomery Street, San Francisco 19, California.

Office of the District Engineer, U. S. Engineer's Office, 751 S. Figueroa Street, Los Angeles 55, California.

Office of the District Engineer, U. S. Engineer's Office, 1709 Jackson Street, Omaha 2, Nebraska

Office of Division Engineer, U. S. Engineer's Office, Southwestern Division, 1114 Commerce Street, Dallas, Texas.

Office of the District Engineer, U. S. Engineer's Office, Box 1538, Albuquerque, New Mexico.

Office of the District Engineer, U. S. Engineer's Office, 4735 E. Marginal Way, Seattle 4, Washington.

Office of the District Engineer, U. S. Engineer's Office, Foot of Prytania Street, New Orleans, Louisiana.

or at Panama Canal Company, 24 State St., New York 4, N. Y.

OFFICIAL PROPOSALS

Bids: November 20, 1952

New York State Road Work

NOTICE TO CONTRACTORS: STATE DEPARTMENT OF PUBLIC WORKS, ALBANY, N. Y.,—Pursuant to the provisions of the Highway Law and CANAL LAW, and Article 2, Title 9 of the Public Authorities Law, and special provisions for projects financed with Federal Aid funds, sealed proposals will be received until ten-thirty o'clock A.M., eastern standard time on the 20th day of November, 1952, by Henry A. Cohen, Director, Bureau of Contracts and Accounts, 14th Floor, The Governor Alfred E. Smith State Office Building, Albany, N. Y., for the following projects:

County	Contract No.	Name	Miles	Type	Deposit	Estimated Cost of Work
DISTRICT No. 1						
G. L. NICKERSON, District Engineer, 333 Broadway, Albany, New York						
Albany	C. T. 52-8P R. C. 52-111 S. T. 52-29	N. Y. State Thruway-Catskill Section-Sub. 5 (Greene Co. line-Normanskill Creek); Selkirk Interchange; Stylebarrel Rd.; Beaver Dam Rd.; Clapper Rd.; Weishert Rd.; Wemple Rd.; Cleeymans-Indian Fields Pt. 1 S. H. 1468; River S. H. 163; Glenmont-Feura Bush. S. H. 367; Albany-Bethlehem S. H. 5499	11.56 Thy. 5.31 Acc.	9" Cem. Conc. Pavt. Pavt. 2 @ 25' Var. Wide = 14.94 Mi. Asp. Conc. Ty. 1A, Opt. = 0.88 Mi. Bit. Mac. Ty. 1 = 0.46 Mi. Cal. Chl. Treat. Grav. = 0.39 Mi. Gr. Sep. 3 Sp. Alpha I-Beam, 146' 3 Sp. Plate Girder Br. 425' Gr. Sep. 18' Sp. Closed Box Conc. Culvert Gr. Sep (R.R.) 3 Sp. Alpha I-Beam 192.5' Gr. Sep. 4 Sp. Alpha I-Beam 286' Gr. Sep. Alpha I-Beam 45° Gr. Sep. 4 Sp. Alpha I-Beam 241.7' Gr. Sep. 4 Sp. Alpha I-Beam 202' Gr. Sep. 4 Sp. Alpha I-Beam 216.7' Gr. Sep. 4 Sp. Alpha I-Beam 230' Gr. Sep. 3 Sp. Alpha I-Beam 198.4'	$470,000 Plans $100	$8,585,000
DISTRICT No. 2						
LACY KETCHUM, District Engineer, 109 No. Genesee St., Utica, New York						
Montgomery	FARC 52-112	Amsterdam-Hagaman, S. H. 298 Manny Corners-Blue Corners S. H. 1498 Proj. No. S-382(1)	4.53	Asp. Conc. Ty. 1A, Opt.	$16,000 Plans $15	288,000
Herkimer	M 52-2	City of Little Falls: Erie Canal Lock 17		Resurfacing with W. I. Plates the Chamber Walls of Lock 17	$23,000 Plans $10	419,200
DISTRICT No. 4						
J. P. LARSEN, District Engineer, Barge Canal Terminal, Rochester, New York						
Monroe	FAC 52-15	Rochester City: Brooks Ave. Proj. No. U-1103(1)	0.21	Asp. Conc. Ty. 2A	$4,500 Plans $10	83,000
DISTRICT No. 5						
C. R. WATERS, District Engineer, 65 Court St., Buffalo, New York						
Erie	O. T. 52-17 S. T. 52-30	N. Y. State Thwy.-Ontario Section Sub. 13 (Union Rd.-Transit Rd.); Cayuga Rd.; Youngs Rd. and 2 Martinal Rds.	2.14 Thy. 0.94 Acc.	2 Course Cem. Conc. Pavt. 2 @ 25' Wide = 2.10 Mi. Asp. Conc. Ty. 1A, Opt. = 0.52 Mi. Bit. Mac. Ty. 1 = 0.35 Mi. Misc. Work = 0.11 Mi. Gr. Sep. 3 Sp. Alpha I Beam 127' Gr. Sep. (P.R.) Alpha I Beam 95.4' Gr. Sep. 3 Sp. Alpha I Beam 130' Gr. Sep 4 Sp. Alpha I Beam 101' 2 Sp. Alpha I Beam Br. 116.9'	$193,000 Plans $50	3,510,000
DISTRICT No. 8						
J. S. BIXBY, District Engineer, Pleasant Valley Road, Poughkeepsie, New York						
Westchester	TSP 52-3	Taconic State Parkway	0.16	Traffic Control Signals	$500 Plans $10	9,000

Maps, plans, specifications and proposal forms may be seen and obtained at the office of the State Department of Public Works, Bureau of Contracts and Accounts, Albany, N. Y., and at the office of the District Engineers noted above, and may also be seen at the office of the State Department of Public Works, 270 Broadway, New York City.

The deposit for Plans and Proposal Forms for each contract is indicated above. A refund will be made in full to bidders for return of one set, in good condition, within 30 days of award, or rejection of bids; refund for all other sets in good condition, similar period, will be 50% of deposit.

Special attention of bidders is called to "General Information for Bidders" in the proposal, specification, and contract agreement, and to the special provisions applying to projects financed with federal funds. Award of a contract is subject to the "Controlled Materials Plan" of the National Production Authority as well as to regulations issued thereunder.

Proposal for each contract must be submitted in a separate sealed envelope with the name and number of the contract plainly endorsed on the outside of the envelope. Each proposal must be accompanied by draft or certified check payable to the order of the "State of New York, Commissioner of Taxation and Finance" for the sum as specified in the advertisement and the proposal. The retention and disposal of the bidding check, the execution of the contract and bonds shall conform to the provisions of the Highway Law, as set forth in "Instructions to Bidders." When optional types are permitted on contracts with federal funds, bidders must state in the space provided in the proposal the exact designation of the optional type upon which the proposal is predicated.

The right is reserved to reject any or all bids.

B. D. TALLAMY
SUPT. OF PUBLIC WORKS

CONTRACTORS

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Publish your announcement thru the "Proposals Section" of Engineering News-Record and get their bids.

SEARCHLIGHT SECTION

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P-5749, Engineering News-Record
330 W. 42 St., New York 36, N. Y.

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MECHANICAL ENGINEER

Established consulting firm, New York area, desires Mechanical Engineer, capable supervising starting, testing, operating and correcting troubles of steam-electric station equipment. Plant betterment work involving considerable travelling. Technical education, and plant operating or betterment experience required. State education, experience and salary desired.

P-5752, Engineering News-Record
330 W. 42 St., New York 36, N. Y.

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Shirt sleeve technologist with solid practical background in all phases of concrete laying and resurfacing with special emphasis on asphalt emulsions wanted by AAA-1 manufacturer of Building Product Specialties. This is an opportunity to join one of the leaders in the field, roll up your sleeves, organize on the job placements, and prove your value to our clients and us through your thorough knowledge and experience in this field. There is considerable travel, of course. Your salary will be based on your background and experience. Send full details with past earnings in complete confidence to

P-5777, Engineering News-Record
330 W. 42 St., New York 36, N. Y.

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WHEN answering the classified advertisments in this magazine, don't forget to put the box number on your envelope. It's our only means of identifying the advertisement you are answering.

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Progressive earthmoving equipment distributorship with territory in Pennsylvania, Ohio and West Virginia. Must be college graduate with engineering degree, between 26 and 40. Assist in supervising and administering shop and field repair service at six locations. Leading lines handled include "Caterpillar" and Bucyrus-Erie. Previous experience not required on these lines. Send complete personal and business background. Recent snapshot optional.

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DESIGN ENGINEER—Attractive future with progressive private utility for graduate with substantial water works design exp. on distrib. systems, reinforced concrete structures, cost estimating, specifications, hydraulic studies, pump performance and chem. treatment. Liberal salary commensurate with ability. P-5784, Engineering News-Record.

ESTIMATOR FOR established heavy construction contracting firm in New Jersey. Will be required to take off and price concrete structures, piping, excavation, structural steel, etc. Write stating qualifications, experience and salary requirements. P-5634, Engineering News-Record.

EXPERIENCED ACCOUNTANT—capable of handling complete financial structure for general contractor's office. P-5843, Engineering News-Record.

EXPERIENCED ESTIMATOR wanted for General Construction work. Experienced in quantity take-off and pricing. Permanent position with a future. Send complete resume and salary expected to: Brotherton Construction Co., Hill Station, P. O. Box 65, Harrisburg, Penna.

EXPERIENCED STRUCTURAL Designer for Reinforced Concrete Spillways, Outlet Towers, Dam Conduits. Location—Harrisburg, Pennsylvania. Salary—$550. per month. List experience and references in first letter. P-5734, Engineering News-Record.

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CIVIL ENGINEER-DRAFTSMAN

Graduate Civil Engineer experienced in design of structural steel, reinforced concrete, foundations and structures. Must also have experience in drafting and be capable of neat lettering. Age 25-45.

DESIGNER-DRAFTSMAN

Experienced in design of structural steel, reinforced concrete, electric power and lighting systems, pressure vessels and piping systems. Prepare layouts and detail drawings from flow diagrams in collaboration with Process or Project Engineers. Two years of college engineering training, civil, mechanical or electric major required. Age 27-45.

Write full qualifications, references and salary desired.

Industrial Relations Department
TIDE WATER ASSOCIATED OIL COMPANY
East 22nd St. Bayonne, N. J.

WANTED
MECHANICAL ENGINEER

Leading firm of Engineers, Designers and Construction require mechanical engineer having some experience with steam-electric central station design with specific and thorough experience on all phases of coal handling systems including unloading from rail or water, conveying, crushing, screening, distribution and sampling. Require general knowledge of capabilities and limitations of equipment commercially available. Initial work mainly on coal handling systems but must have ability to develop into well rounded general engineer capable of later handling all phases of central station design. State education, experience and salary desired.

P-5753, Engineering News-Record
330 W. 42 St., New York 36, N. Y.

BUILDING ESTIMATOR

Experienced man, capable of assuming responsibility, to take charge of estimating and contract work. This is an exceptional opportunity with a young and growing building organization operating throughout the south. Write fully stating education, experience, references, availability and personal details.

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For Southeast Architect-Engineer Firm.
Want thoroughly experienced and capable designer of water, gas and sewer plants and systems, drainage, paving, other municipal improvements. Top opportunity to man who can design, promote, and sell projects. Only complete and orderly applications will be considered.

P-5820, Engineering News-Record
330 W. 42 St., New York 36, N. Y.

CONCRETE-HYDRAULIC ENGINEERS

New York engineering organization specializing in design and construction of power plants and industrial structures desires Engineers thoroughly experienced in design of heavy reinforced concrete foundations, steam and hydroelectric power plant structures. Work will include planning, assignment of work, supervision of design and specification writing. Applicants preferably should be at least 40 years old with about 15 years general field and office experience. Please submit complete resume.

P-5748, Engineering News-Record
330 W. 42 St., New York 36, N. Y.

WANTED

An Alert Mechanical Engineer with Some Knowledge of Electrical Engineering . . . Must Be a Good Calculator . . .

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POSITIONS VACANT
(Continued from preceding page)

PLANT SUPERINTENDENT — New York Metropolitan college. Mechanical Engineering degree required. Experience in building construction and maintenance. Send complete resume of training and professional experience, personal data and salary expected, to P-5879, Engineering News-Record.

SELLING OPPORTUNITY OFFERED

SALES ENGINEER for large concrete products manufacturer operating in eastern half of United States. Applicant should be graduate civil engineer with sales personality. Prefer person who lives in vicinity of Baltimore, Maryland. Excellent proposition with a bright future. Write SW-5709, Engineering News-Record.

POSITIONS WANTED

CHIEF ACCOUNTANT, complete charge, all phases, payrolls, purchasing, materials and equipment, costs, taxes, etc., both field or central office. Sober, reliable, used to responsibility. PW-5857, Engineering News-Record.

CIVIL ENGINEER, Canadian, age 34, 8 years experience on building and heavy construction, field and office. Would like position with General Contractor in U. S. with future possibility of forming branch business in Canada on profit-sharing basis. PW-5859, Engineering News-Record.

CIVIL GRADUATE, 26, single, two years experience as state and federal building construction inspector, some office experience, desires office and field work. Will travel, foreign or domestic. PW-5821, Engineering News-Record.

CIVIL ENGINEER, Netherlands, Delft graduate 1942 Holland & S. Africa, contracting, semi-government, good organizer and administrator, had overall project responsibility, of doubtless integrity, desires change, prefer machine works, dredging, irrigation, any country. Write or cable Advertiser, Box 59, Silverton, Tvl. S. Africa.

CONSTRUCTION SUPERINTENDENT. Concrete Pipe Manufacturer, machine or cast, experienced. PW-5767, Engineering News-Record.

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P-5787, Engineering News-Record
330 W. 42 St., New York 36, N. Y.

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Will arrange thru purchase of (1) Capital stock, (2) Assets, (3) Machinery and equipment, whole or in part—Personnel usually retained, strict confidence. Box 1351, Church St. Sta., New York 8, N. Y.

For Sale
STEEL FRAME BUILDINGS

Up to 700,000 sq. feet.

Immediate delivery.

50 Church St. Room 269, New York City

HIGH PRESSURE PUMPS

2—A. Ch. 400 G.P.M., type ML, 6 stage, size 5 x 4, 1614 Ft. Hd.
1—Worth. 740 G.P.M., type WCS-2, 5", 2250 Ft. Hd.
1—Worth. 700 G.P.M., type UNS-1, 6 stage, 6", 1550 Ft. Hd.
2—I. R. 200 G.P.M., 2" 1375 Ft. Hd.
Pumps are mounted on bases, for motor or turbine drive.

We have about 200 various size cent. pumps on hand, turbine, motor, and gasoline driven. Send us your inquiries.

DALTON SUPPLY CO.
2829 Cedar St. Phila. 34, Pa.

FOR SALE

Large V type Bros snow plows. Suitable for large truck or heavy grader. Complete with Black Hawk Hydraulic lift. Send for specifications. Will be sold cheap.
One Model KR-5 Nelson snow loader. Condition perfect. Photographs on request.

SEARS & BOWERS
4th & Spring Garden Sts. Easton, Pa.

SACRIFICE
7 WHITEMAN
CONCRETE POWER BUGGIES
Look and Run Like New.
STONEWALL CRANE SERVICE
732 E. 141 St. Bronx 54, N. Y.
MElrose 5-3993

FOR SALE
Buckeye Trencher

Model 410, ladder type, digs to 6 ft. deep 24 inches wide. Excellent condition. $4000.00.

KANE BROS.
BOX 1296 WENATCHEE, WASH.

Additional For Sale Advertising on pages 128-135, Auction Advertising page 130

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ENGINEERS And DESIGNERS

Arthur G. McKee and Company has openings in their Cleveland, Ohio and Tulsa, Oklahoma offices for:

Instrument Specifications Engineers
Piping Designers
Pressure Vessel Designers
Structural Designers
Concrete Designers
and
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with experience in petroleum refinery design.

Good hourly rates with overtime
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Annual profit-sharing bonus

These are permanent positions which are well worth your investigating.

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New York engineering organization specializing in design and construction of power plants and industrial structures desires Engineers thoroughly experienced all phases of structural design, correlated with architectural design. Duties include planning, assigning of work, supervision of design, writing of specifications and requisitioning of materials. Applicants should have at least 15 years general field and office structural experience. Please submit complete resume.

P-5751, Engineering News-Record
330 W. 42 St., New York 36, N. Y.

CHEMIST

Chemist experienced analyzing power plant problems, capable prescribing water treatment methods and writing equipment specifications, training and supervising plant chemists and operators. State education, experience, salary desired.

P-5750, Engineering News-Record
330 W. 42 St., New York 36, N. Y.

ME...an AIRCRAFT ENGINEER...in CALIFORNIA?

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The step up to Aircraft Engineering—and a better life in Southern California—isn't as steep as you might expect.

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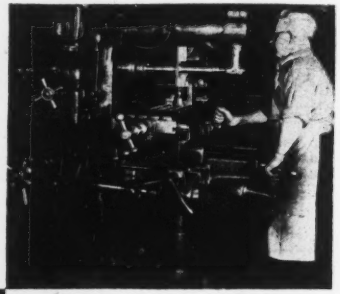
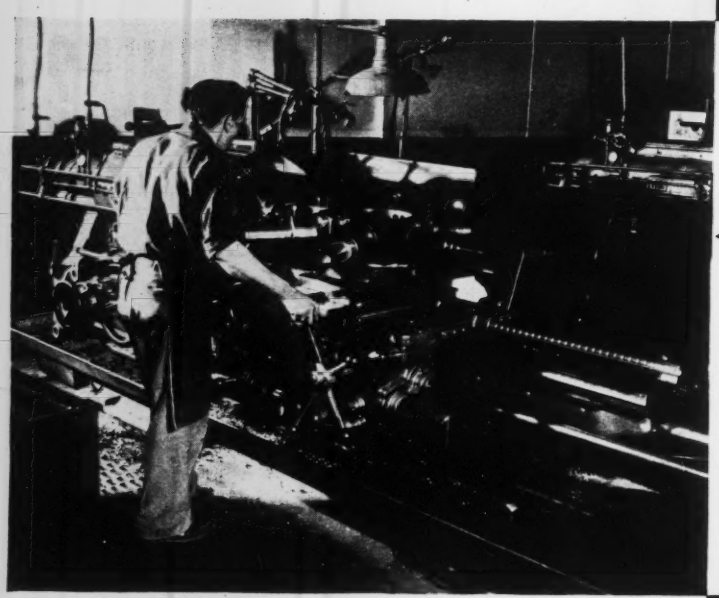
He works with Doctor-like thoroughness

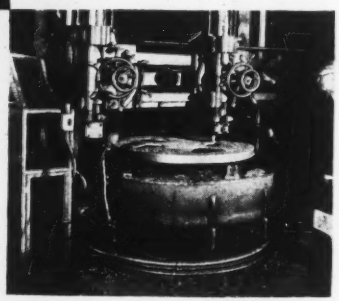


Milling operation on #3 Brown Sharpe milling machine.
Milling slot in Hoist control lever for American locomotive crane now being rebuilt for Bobcock-Wilcox Tube Co., Barberton, Ohio.



Turret Lathe operation on #5A Gisholt turret lathe.
Turning—boring—facing and cutting to length, Bronze bushings for Lorain 820 turntable rollers. With parts in short supply as they are today, the ability to help ourselves is money in our customers' pockets.

Boring mill operation on 60 in. Niles vertical boring mill.
Turning and facing cylinder end casting for Robot laundry washer.



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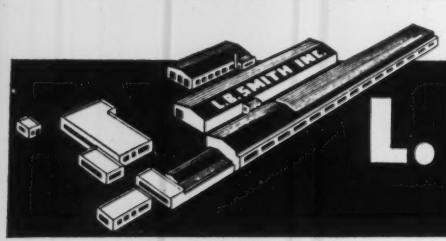
Where rebuilding is a business—with over 25 years of experience on all types of construction equipment—where highly trained mechanics with precision tools—can build back into your equipment many years of additional and efficient usefulness—using the same thoroughness employed in rebuilding our own used equipment.

You are invited to investigate our complete facilities.



L. B. SMITH INC.

CAMP HILL, SUBURB OF HARRISBURG, PA.

L. B. SMITH INC.

New and Used Equipment News

Prepared Monthly by Ed Woolford at Camp Hill, Pa.

VOL. 1 NO. 8

AIR COMPRESSORS

Gardner-Denver 500 cu. ft. diesel, new condition.
Gardner-Denver 500 cu. ft. diesel, good operating condition.
Schramm 105 cubic foot gas powered compressor on 4 steel wheels.
Worthington two-stage, water-cooled, vertical 250#, 60 CFM, new condition.
Paving breakers, jackhammers, wagon drills, tie tampers.

QUARRY EQUIPMENT & BINS

2020 Cedarapids Double Impeller. New condition.
2036 Cedarapids AAA primary unit on rubber.
1036/2418 Cedarapids Jr. Tandem unit on rubber.
4024 Cedarapids roll, rebuilt.
3018 Cedarapids roll, rebuilt.
Cedarapids Rock-It plant with 2025 jaw, 3033 mill. New.
Cedarapids 1236 Model 6C plant, new.
10x7 Allis-Chalmers Blake type jaw crusher.
#1 Cedarapids Kubit impact breaker.
4' x 12' Cedarapids Ag lime double deck.
4' x 6' Kennedy Van Saun single deck.
3' x 6' Kennedy Van Saun triple deck.
36" Wemco single screw, new condition.
15 cu. yd. Cedarapids sand drag, new.
16" x 90' bucket elevator.
60-ton, 2-compartment, 8'x18' storage bin with clamshell gates.
Special bins to your specifications.
Conveyors—18"—24"—30"—36". Also belt.

TRUCKS—TRAILERS

1½-ton Ford with any body.
2000-gallon tanks on semi-trailer mounting.
New and rebuilt dump bodies.

GENERATORS & LIGHT PLANTS

1½ KW to 125 KW, alternating and direct current gasoline and diesel powered.

SHOVELS—CRANES

Osgood Model 900, 1¾ yd. diesel combination.
Lorain 40 truck crane on Mack 3-axle truck.
Unit 1020, ½-yd. gasoline crawler shovel. Good condition.

SHOVEL & CRANE ATTACHMENTS

Lorain L-41 Chain Crowd Shovel Attachment. Rebuilt.
Lorain 40 Hi-Lift shovel attachment.
P&H 203 shovel attachment.
Chain crowd Lorain 30A shovel attachment.
Bucyrus-Erie 1½-yd. rock bucket.
McCaffrey Model 648 for 1¼ to 2-yd. crane.
McCaffrey Model 636 for ¾-yd. to 1-yd. crane.

Backhoe Buckets & Attachments

Lorain 30 hoe attachment complete.
¾-yd. Lorain, 40, LBS #6105, 44" cutting width.
¾-yd. Amsco 40" cutting width, LBS #8101.

CLAM—DRAG—SCRAPER BUCKETS

LIFTING MAGNETS

1—45" Ohio lifting magnet, rebuilt.

SHOVEL DIPPERS

Lorain 41, ¾-yd. LBS #8600, rebuilt.
New Lima 1-yd. Amsco, LBS #2295.
Bucyrus-Erie 1¼-yd. gas air, LBS #3782, fair.
Lorain 75B, 1½-yd. manganese bucket, LBS #8538.
Lorain 75B, 1¼-yd. extended lip, 1¾-yd. LBS #2260.
Pettibone-Mulliken 2-yd. Lorain 82 or 820, manganese, LBS #5361.
Pettibone-Mulliken 2-yd. for 3500 Manitowoc LBS #5763.
Esco 2½-yd. cast weld dipper with bail & teeth.

CONCRETE EQUIPMENT

Blaw-Knox gas-electric finisher, 10½'-12½', rebuilt.
Koehring 10'-12' finishers, rebuilt.
Cleveland formgrader, new 1944, rebuilt.
Corr formgrader, new 1944, rebuilt.

TRACTORS

TD-24 International with Bucyrus-Erie angle-blade.
TD9 International diesel with 1 yd. Loadover.
Model CR Tournapull w/16-yd. Model E16 Tournarocker, rebuilt.

WELL DRILLS & TOOLS

Sanderson-Cyclone #42 well drill, new.
Sanderson-Cyclone #44 well drill, new.
Bits—Stems—Bailers—Sockets—Etc.

Barber-Greene 44C Trenching Machine 18" to 24" cutting width, 7' depth.

PUMPS

New Layne Bowler type 18 deep well pump with right angle gear drive. 3000 GPM at 120' TDH.
Used and rebuilt pumps, all sizes, gasoline, electric or diesel.

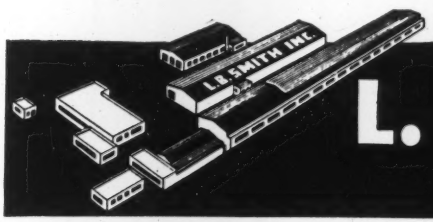
GRADERS

Austin Western 77 tandem drive, scarifier, 12' blade, gas power, hydraulic controls.

GASOLINE AND DIESEL ENGINES

Caterpillar D-13000, rebuilt.
Murphy ME-6, rebuilt.

Phone **HARRISBURG, PA. 7-3431**



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CAMP HILL, SUBURB OF HARRISBURG, PA.

PUBLIC AUCTION

Contractors and Mine Machinery

of former

Samuel R. Rosoff, Ltd.

Route 26, Randallstown, Md.

12 miles northwest of Baltimore
1½ miles beyond Randallstown Bank

Thursday, November 13, 1952 at 11 A. M.

TO BE SOLD ON THE PREMISES

THE SALE COMPRISES

2 Lorain Model TL-20 "Moto-Crane" (1948) over the road Diesel Cranes; 16 Greensburg Machine Company "Cruiser" Mine Locomotives; 31 Electric Storage Battery Sets; 11 Battery Charging Sets; 3 Eimco Muckers, 14,000 feet 18" Naylor Spiralweld Duct and Couplings; Ottumwa 48" x 48" Mine Hoist, Worthington 500 G.P.M. Pump, 1,800 Foot Head, 350 H.P., 2,300 Volt Motor; Miscellaneous Pumps; Mine Hoists, Mechanical Drill Forge Shop, stock parts, electrical switches, transformers, etc., pneumatic tools, breakers, drills, etc.

Write for Descriptive Illustrated Brochure

SAMUEL T. FREEMAN & CO.

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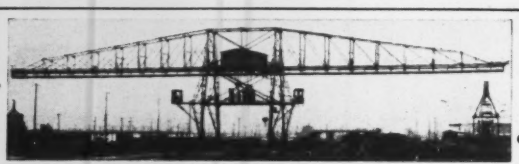
Used Hammer Head



Colby Double Cantilever Crane

300' span, 44' lifting height, 12¼ ton lift, 43' track span. Double control cabs, 440 Volt, 3 ph. 60 cycle. This crane is in excellent condition and is offered at an exceptionally attractive price. "AVAILABLE NOW", for your inspection at Richmond, California.

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Construction-Industrial & Mining Machinery

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FOR IMMEDIATE DELIVERY

DEFORMED REINFORCING BARS

INTERMEDIATE AND/OR STRUCTURAL GRADE
⅜" TO 1" ROUND—1" TO 1¼" SQ. EQUIV.

BAR SIZE ½x½x⅛ to 2½x2½x⅜ — ANGLES — STRUCTURAL 3x3x3/16 to 8x8x1

BEAMS—STANDARD & WIDE FLANGE
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BRAND NEW DOMESTIC STEEL

14" x 16" WF Column Sections

17 pcs. 64 ft.—26 ft. 426# per ft.
3 pcs. 73 ft.—70 ft. 370# per ft.
1 pc. 32 ft. 342# per ft.
20 pcs. 77 ft.—26 ft. 320# per ft.
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Immediate Shipment—All or Any Part
Can also offer other sizes and sections

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FOR SALE

P & H 655 Shovel or Crane
Lorain 78 Shovel or Crane
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P & H 855 Shovel or Crane
P & H 255A Truck Crane, Serial No. 7174
Bay City 180 Truck Crane, Serial No. 5165
D-7 Hydraulic Angledozer, Serial No. 3T-4510
D-7 Cable Angledozer, Serial No. 7M-6601
D-7 Hydraulic Angledozer and DDPCU Serial No. 3T1227
D-4 Traxcavator, Serial No. 7U-10365
HD-5G Front End Loader, 5900 Series
Air Compressors—105 CFM—All Makes
406 and 410 Buckeye Ditchers—Good Shape

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IF IT'S MADE, WE HAVE IT!

Seamless and Welded—Every Size and Wall Thickness—Cast and Wrought Iron, Steel, Alloys

POWER PIPE FABRICATING
Bending, Coiling, Flanging, Threading, Beveling, Lining, etc.

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SPEED-LAY PIPE SYSTEMS
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SOIL PIPE—EXTRA HEAVY
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VALVES and FITTINGS
All Sizes in Stock
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GREENPOINT IRON & PIPE CO. INC
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Three—LeTourneau Model W Scrapers—Good Rubber.
Price, each **$6,500.00**

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Lima Model #34 Paymaster ¾ yard Shovel.
Price **$9,500.00**

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Insley Model K-12 ½ cu. yd Trench Hoe.
Price **$6,000.00**

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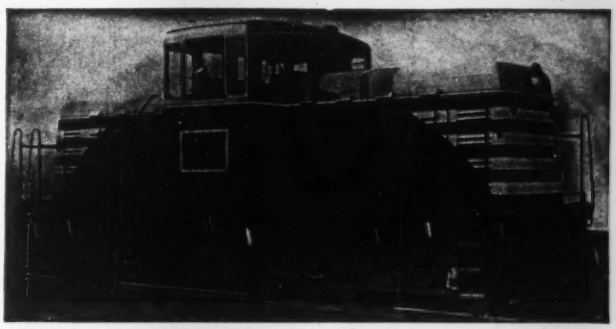

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Standard Gauge **Excellent Condition**

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Cat. D7 Bulldozer #4T5988
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Cat. D8 Tractor #8R8926
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New Wire Rope Blocks

12" Snatch Blocks with Hooks..... $13.50
14" Snatch Blocks with Hooks..... 18.50
16" Safety Snatch Blocks with Shackles 20.00
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3 x 3 x ¼ up to and including 6 x 6 x ¾ Angles
4" I Beams up to and including 36" WF Beams
4" up to and including 15" Channels
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EVERY TIRE GUARANTEED TO BE IN PERFECT CONDITION
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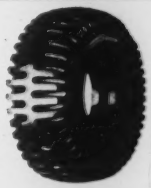

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Complete with Adj. Shoulder Strap

$75.00 Value **$14.50**

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12½" long, 10" deep, 5½" wide. Has full flap closure with three straps. A rugged bag for carrying instruments and equipment, designed to give years of service. Oak tanned grained leather construction.

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Comp. With Shoulder Strap

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$22.50 Value **$3.75 EA**

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Spun brass case, 3" card. Predicts weather 12 to 48 hrs. in advance. Adjust for altitude. Comes complete with instructions. **$5.75**

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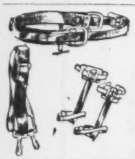

NEW U. S. ARMY LINEMAN'S POLE CLIMBING SET

Contains 1 leather tool belt, 1 leather safety strap with galv. hooks, 1 set of spurs with leather pads and straps.

Reg. $26.00 VALUE **$13.00**

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Comp. With Leather Case

Made by Keuffel & Esser Co. 360 Degree Jewel Mounted Card. 3" Dia., Prism & Folding Sight Vane.

Used Good Cond. REG. $22.50 **$5.75**

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Don't buy trouble . . .

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All Items are Below Present Ceiling Prices

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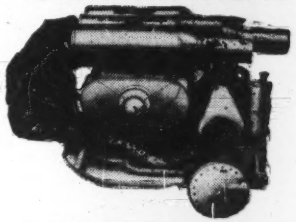

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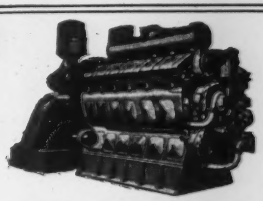

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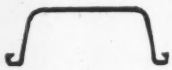

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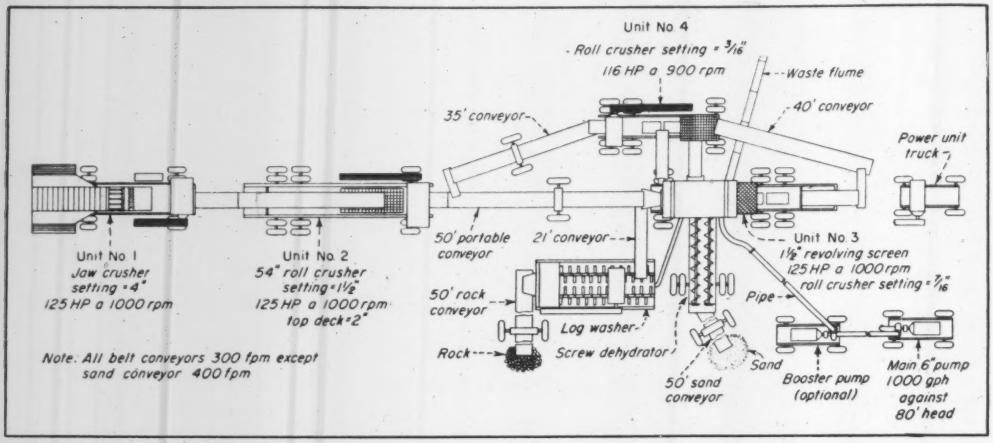


FLOW SHEET of world's largest portable rock-crushing plant shows size and horsepower of various crushing and reduction units. Thirteen of fourteen units are pneumatic-tired for quck spotting and relocation. Plant can be used in any workable rock quarry in world; will process over 200 tons per hr, 60% of which is rock passing 1½-in. screen and 40% sand passing ¼-in.

Big portable rock-crushing plant produces over 200 tons per hour

J. M. Connolly,
Associate Editor

THE SCENE was a stone quarry on the outskirts of Minneapolis. All eyes were focused on a string of machines that composed the world's largest portable rock-crushing plant.

Set up for a demonstration by Pioneer Engineering Works, the plant spread 250 ft from one end to the other and consisted of fourteen units, thirteen of which were mounted on pneumatic tires for quick relocation, spotting or removal.

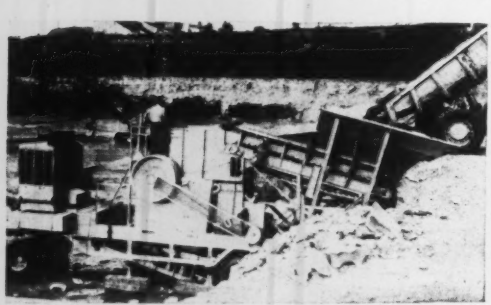
Thirty men—top-level personnel from various segments of the armed forces—were gathered to watch this huge plant produce crushed stone and sand in volume and percentages never before obtainable.

• **Timed demonstration**—At a signal, operators mounted to their stations. Five of them started up Minneapolis-Moline gas engines for powering the monstrous crushers. Another revved up a General Motors diesel-powered generating set; then pushed a series of buttons on a central control panel to set some 20 electric motors in operation on conveyor belts and screens.

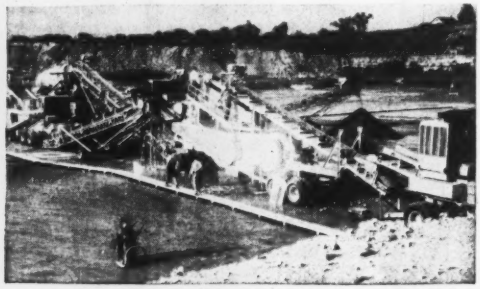
The roar echoed and re-echoed in the quarry. The first of a parade of rock-laden trucks backed into place at a receiving hopper at one end of the line. The rock, blasted from the quarry in just the right size to be loaded by a 1¼-yd shovel, was dumped in 12-ton loads into the hopper, caught up by an apron feeder in the No. 1 unit and carried to its primary jaw crusher, previously set at 4 in.

The operator of this unit controlled the flow of materials into the entire plant, eliminating surges on any of the subsequent belts or other components.

• **Through the mill**—From Unit 1, the material was carried by belt to the second pneumatic-tired unit, which housed the first reduction crusher. Material larger than 2 in. flowed along



TWELVE-TON LOADS of rock were dumped into hopper of first unit (left) and run through primary jaw crusher set at 4 in. Flow of materials was controlled here and passed on to Units



No. 2 and 3 (right) containing reduction crushers, scrubber, sizer, washer. A fourth unit is used for increased production of sand when necessary, up to 40% of total, and controllable within 1%.

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*** Fuel oil, lube oil, and air lines—steam returns—drinking water distribution lines for yard office and commissary buildings—wash water piping**

When Seaboard Air Line made plans for the relocation of their railway terminal at Miami, company engineers carefully selected materials to meet service conditions in the new terminal. They specified genuine wrought iron for the services listed above to forestall the maintenance threat of early failure and costly replacement.

The new shop and yard area, a multimillion dollar project, is located near Hialeah, Florida, four miles north of the former terminal. M. R. Harrison Construction Company, Miami, Florida, was the general contractor.

An increasing number of the nation's leading railway engineers are using Byers Wrought Iron to solve maintenance and repair problems in a wide variety of services. First hand experience has convinced them of the greater durability and greater over-all economy of Byers Wrought Iron in those applications where corrosion is a threat to service life.

Our bulletin, WROUGHT IRON FOR PIPING SYSTEMS, discusses corrosive conditions encountered in various services and illustrates a few of the many places where engineers have successfully applied genuine wrought iron. Write for your copy.

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This notch-fracture test specimen illustrates the unique fibrous structure of genuine wrought iron—which is responsible for the high corrosion resistance of the material. Tiny threads of glass-like silicate slag, distributed through the body of high-purity iron, halt and disperse corrosive attack, and discourage pitting and penetration. They also anchor the initial protective scale, which shields the underlying metal.

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WROUGHT IRON

TUBULAR AND HOT ROLLED PRODUCTS

ELECTRIC FURNACE QUALITY ALLOY AND STAINLESS STEEL PRODUCTS

PORTABILITY of huge units is demonstrated in this photo of scrubber-sizer, highest of 14 units. For this move from manufacturer's yard to quarry and return, workmen from transit company had to lift overhead trolley wires clear of topmost frame section.

the top of a protecting deck and dropped into a 54-in. roll crusher with a setting of 1½ in. Remaining material, all under 2 in., fell through this protecting deck onto a middle and bottom deck, from where it joined material from the output end of the roll crusher and continued on to Unit No. 3.

This third unit had a front and rear section: Partly-processed material was carried high into the receiving end of a huge, rotating combination scrubber and sizer, for washing, rinsing, sizing and separation.

The revolving screen of this sloping scrubber-sizer was made up with 1¼-in. holes and passed on any material that would not fall through—into a 40-in. roll crusher in the second section, whence it was recirculated and re-introduced into the scrubber to close the circuit.

Material smaller than 1¼ in. passed through the holes of this scrubber during the washing-screening process and fell on to a shaker screen of ¼-in. size. Sand passing this screen was fed into a screw-type dehydrator and finally to its last conveyor belt, for deposit on a stockpile. Anything larger than ¼ in. passed over this shaker screen, fell into a receiver, thence into a log washer, where any final traces of shale or clay were removed, and was finally transported to its stockpile.

• **A new record**—At the end of an hour, over 204 tons of material had been processed to exact specifications; 44% was sand that had passed a ¼-in. screen, and the balance was rock that had passed 1¼-in. In all—a remarkable job.

• **Background and specifications**—For Pioneer's organization, it was a red-letter day. For Melvin Ovestrud, Pioneer's president and J. A. Hanratty,

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his expert on crushing problems, it was a triumph traceable to many long and hard years of preparation, planning, experimentation and patient development.

It had been a long, hard struggle from the day, back in 1942, when the Corps of Engineers gave them their specifications RC-201. These demanded a plant that would have the ability to produce 150 tons per hr of concrete aggregate from any workable rock quarry or gravel pit in the world.

Further, it had to be able to (1) receive materials from trucks loaded by a 2-yd shovel, (2) crush the rock to a maximum of 2-in. square mesh in the first stage and 1¼ in. in the second, and (3) in either case, produce not less than 40% of the product passing ¼-in. mesh while operating as a washing plant.

Another limiting factor throughout this development period was that emphasis had to be put on use of standard, and not special, models. This was demanded for many reasons, chief among which were (1) lower ultimate price for the taxpayer, (2) no need for extra operating instructions or specialized operators and (3) limited problems in parts replacement and servicing.

• **Alternate processes**—Washed materials were produced at the demonstration through a wet-screening process. However, the plant can produce by a dry-screening process as well. In that instance the flow is the same as with the wet process up to and including the fourth unit. It bypasses the scrubber, however, and neither the log washer nor the sand dehydrator are required. When material is to be produced from gravel deposits the primary unit can be eliminated and process begun with the No. 2 unit. Then progress through consecutive sections is the same as with rock.

• **How much sand?**—Perhaps the most significant part of the entire operation is the close control of the percentage of sand produced, up to 40% of total input. When working from gravel deposits where sand content may be high, all excess sand is deflected by a controlled baffle in the second unit and carried off out of the way. When the opposite is true with rock, and sufficient sand is not produced after passing the scrubber, the material is crushed in the usual manner in the first, second and third unit; then carried through a fourth unit that is brought into play for additional production of sand to raise the propor-

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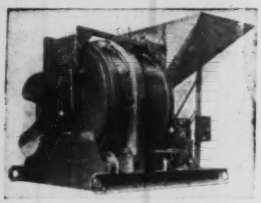

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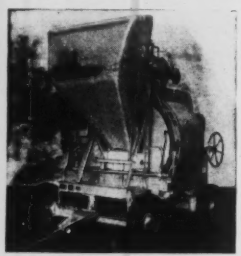

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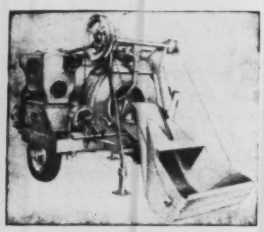

CMC 6-S TRAILER

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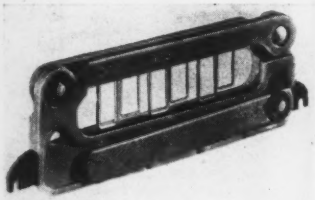
tionate output to the desired level.

Should the need arise, any operator can push an emergency button on any one of the units, stopping all conveyor systems throughout the entire plant. Another eye-opening feature of the demonstration was that the loaded belts could be stopped and started without any special precautions or adjustments. Two 6-in. pumps deliver 1,000 gpm against an 80-ft head for the scrubber and log washer. From there the water is flumed off to a settling pond where it can be re-circulated as many times as necessary. In less than 5 hr the entire unit can be dismantled for loading aboard 11 railroad flatcars for quick transfer to a new operating position. Half of the company's current production is going to the armed forces and the remaining to civilian consumers. PIONEER ENGINEERING WORKS, 1515 CENTRAL AVE., N.E., MINNEAPOLIS 13, MINNESOTA.

Solvent-free roofing is entirely flame-resistant

There is a new roofing compound available which is said to be completely fire-resistant and which will not alligator during low exposure to sunlight.

Trade named Dastuf, the new roof coating is said to resist combustion even when subjected to an open flame of 200 degrees F. It contains no high flash point solvents of any sort—cutback tar, asphalt, kerosene, naptha, gasoline, benzine or other fire hazards found in some roof coatings. What's more, it may be applied on damp or dry surfaces with either brush or spray—on tar, felt or slag roofs. It is said not to sag, flow, alligator nor carbonize and is available in shades of red, green, grey or black. THE DASCO COMPANY, 1602 THAMES STREET, BALTIMORE, MARYLAND.



Multi-purpose tool for spark plug servicing

This multi-purpose tool is really four tools in one. It holds stainless steel wire gap gages ranging from .015 to .040 in.; two gap adjusting slots for electrode bending; a double-cut precision file for refacing sparking areas; and four gasket reject slots for determining the utility of used spark plug gaskets.

Measuring 3¼ x 1¼ in., the handy WG-300 gap tool has a molded plastic body.

The company says that the U-shape of the wire gages permits easy measurement of electrodes of any type except four-prong cloverleaf types on aircraft plugs. The gasket reject slots provide a true basis of measurement for a mechanic to determine when a used gasket should be discarded. When a worn-out or over-compressed gasket can pass through the individual slot marked with its size, replacement is indicated. CHAMPION SPARK PLUG COMPANY, TOLEDO, OHIO

New product briefs . . .

What is claimed to be the first **die-cast magnesium carpenter's level** in standard size is being made by **Mayes Brothers Tool Manufacturing Company of Port Austin, Michigan.** The 24-in. level features permanently set dust- and dirt-free vials and takes advantage of magnesium's light weight, dimensional stability and ruggedness.

The name "Nite-Hawk" has been applied to a new **two-wheel, pneumatic tired trailer** which carries **four 80,000 candlepower floodlights** that can be raised to 8½ ft, and aimed in any direction. Powered by a Winpower 5 kw, 115-volt a-c generator and a Wisconsin 4-cyl air-cooled engine, the plant has many construction, municipal and airport applications and can serve as a transportable emergency 5,000-watt power plant. It's made by **Winpower Mfg. Co., Newton, Iowa.**

A light-weight, **portable angle-iron carpenter's bracket** opens from a 2 x 48-in. package for use on residential and industrial construction. A product of **Wilson-Albrecht Co., Inc., (Dept KP) 3565 Wooddale Ave., Minneapolis 16, Minn.,** its design permits the four-piece Waco bracket to accept a 36-in. ledger for sheeting, siding and shingling jobs, etc.

Kohler Co., Kohler, Wisconsin, manufacturers of engines, electric light plants, plumbing equipment and precision controls, has come up with Model K 90, **a new engine with 3.6 horsepower rating at 3600 rpm.** It is an ideal power source for centrifugal pumps, portable saws and other pieces of equipment requiring ample power in a compact space.

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PUBLICATIONS

Rubber floors—Here is a booklet, published as part of the new educational program being conducted by the Rubber Flooring Division of the Rubber Manufacturers Association, Inc., to inform architects, interior decorators, contractors, home owners and others about the advantages of modern rubber flooring.

Intended as a non-technical reference book for those who have an interest in building, it contains a brief description of the features of rubber flooring, how it is made, information on installation and recommendations for proper maintenance. RUBBER FLOORING DIVISION, THE RUBBER MANUFACTURERS ASSOCIATION, INC., 444 MADISON AVENUE, NEW YORK 22, N. Y.

Chemical proportioning pumps—An attractive 8-page bulletin is offered with the latest information on heavy-duty Chem-O-Feeders.

These small proportioning pumps, available with one, two or three measuring chambers for capacities up to 57 gph, are supplied as a "package" making installation extremely simple.

The bulletin gives specifications and features together with many installation diagrams, a list of chemicals fed, and other helpful information. Book is labeled No. 1225 and is available from PROPORTIONEERS, INC., PROVIDENCE 1, R. I.

Site-cast concrete pipe—When your project requires large-diameter pipe or is some distance from the nearest pipe supply, you can have a Universal man deliver a complete pipe plant right to the site. He can furnish all equipment and key personnel; local labor can do the work with local material. "You get the pipe you want when you want it," the booklet says.

It goes on to show that by bringing the plant to the job, you can save freight charges and time wasted waiting pipe delivery. Pipe cast on the site will be in top condition—no loss due to broken ends, cracks or other shipping damage.

A series of photos gives the complete Universal site-cast story. UNIVERSAL CONCRETE PIPE CO., 297 SOUTH HIGH STREET, COLUMBUS, OHIO.

Chimney folder—Nearly a half-century of Rust's chimney building service to industry is described in a 4-page folder now available from the company.

A pioneer in chimney building and modern chimney maintenance, the

Chimney Division has designed and built thousands of radial brick and reinforced concrete chimneys—including many of the world's largest—for every industrial use.

Many of these may be viewed in 23 illustrations in the folder which also depicts one of the country's tallest chimneys in various stages of construction. CHIMNEY DIVISION, THE RUST ENGINEERING COMPANY, RUST BUILDING, PITTSBURGH 19, PENNSYLVANIA.

Stainless steel walls and roofs—The use of stainless steel for industrial walls and roofs is the normal result of the phenomenal success stainless steel has enjoyed in the architectural building field.

A highly-illustrated 32-page booklet explains different grades available; maintenance, installation, and suggested specifications.

Included in these specifications are corrugated sheets, flashings and fasteners of all types. U. S. STEEL CORPORATION SUBSIDIARIES, ROOM 4321, 525 WILLIAM PENN PLACE, PITTSBURG 30, PENNSYLVANIA.

Vertical wet pit centrifugal pumps—The company's Bulletin 3-8000 covers two similar but functionally different types of vertical centrifugal, wet-pit pumps; a heavy-duty bilge pump for handling solids-free liquids and drainage and a screenless sewage ejector, constructed to handle sewage and solids-carrying liquids.

The bulletin also introduces "Lubri-Vac", a new lubricating system which is said to provide continuous positive lubrication of pump bearings, reduce bearing failure up to 95%, and increase over-all pump life by 12%.

Included is a chapter on the company's service to architects and engineers. YEOMANS BROTHERS COMPANY, 1999-1 N. RUBY STREET, MELROSE PARK, ILLINOIS.

Arc welding electrodes—A new 49-page, pocket-size booklet describing the application, chemical analysis and mechanical properties of General Electric's welding electrodes has been announced as available from G-E welding distributors.

Designated GED-1634, the new booklet also includes an electrode trouble-shooting chart, another which specifies the number of electrodes per pound, and an explanation of the AWS nomenclature. GENERAL ELECTRIC COMPANY, SCHENECTADY 5, N. Y.

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EDITORIALS

Needed road-test information

A STRONG PLEA for support for a comprehensive study of the relationship of highway loads to highway costs was made by Fred Burggraf, director of the Highway Research Board, before the recent annual meeting of the American Trucking Associations, Inc. Such a study now is being planned by the American Association of State Highway Officials (ENR Aug. 21, p.26). It will include both rigid and flexible types of pavement and a wide range of axle loads and vehicle types.

The need for information of the type to be developed by the proposed AASHO test program is great. The Maryland test showed that pavement life is closely related to vehicle load and traffic density, but it did not provide any accurate knowledge on design criteria that should be followed to provide a pavement adequate for the heavier loadings used in that test. That information must be available before the state highway departments can determine what it will cost to provide highways sufficient for the higher loadings favored by truck operators.

The cost of building the test road and conducting the test program is now estimated at nearly $4 million. That figure sounds high, but actually it is small in relation to the savings that should result from knowing accurately what types of pavement are adequate for each of a wide range of highway loadings.

What taxes for roads?

HIGHER gasoline taxes and motor-vehicle license fees as a means for financing an expanded highway-building program were proposed by John V. Lawrence, managing director of the American Trucking Associations, Inc., at that organization's annual meeting (ENR Oct. 16,p.26). Without doubt, increases in such taxes provide the quickest way to get more money in most states—and indeed have been urged in these pages also—but such tax increases are not the most equitable way to pay for the highway improvements most needed by the industry Mr. Lawrence represents. The weight-mile—which is an outgrowth of the ton-mile tax so vehemently opposed by truck operators—places the cost of the heavy-duty pavements, now needed for our main highways, where they belong: on the truckers who make the most use of those highways. Originated in Oregon, which state also pioneered in the use of a ton-mile tax as a means for raising highway funds, this tax is based on vehicle weight and distance traveled (either loaded or empty), and the rate rises sharply for the higher vehicle weights. In this, it differs from the ton-mile tax, which is a flat rate applied to the tonnage of the vehicle. R. H. Baldock, state highway engineer of Oregon, says that a reasonably uniform relationship exists between weight of vehicle, capacity and size, and that as a result the weight-mile tax is an equitable way to fix the "cost responsibility" of various types of truck operators. Under the present Oregon tax, a 6,000-lb pick-up truck pays one-fourth of a cent a mile while a 68,000-lb truck-trailer pays four cents a mile.

Many objections to either a ton-mile tax or a weight-mile tax have been put forward by truck operators. One of the more serious relates to the cost of administering the tax, which is estimated in Oregon at 11 percent of the intake. Nevertheless, if the weight-mile tax results in a more equitable distribution of the cost of needed highway improvements than does the gasoline tax, it is worthy of careful consideration.

All of which gives special force to the advice given to the truck operators at the ATA annual meeting by their president, Walter Mullady, who told them that they would have to do more than oppose ton-mile tax legislation in states where such laws are under consideration. They would have to come up with better proposals for new sources of highway revenue. If they can put forward a tax proposal less costly than the weight-mile tax and one that introduces fewer administration problems while still recognizing the greater cost responsiblity of operators of large trucks, there is good reason to believe that such a proposal will be welcomed by both state highway officials and members of state legislatures.

Adding to municipal costs

A BYPRODUCT of the scandal over sewer construction in the Borough of Queens, New York, is a proposal to set up a Board of Responsibility to pass on the fitness of contractors to do construction work for the city. Such a plan may have merit, but it also has dangers. Arguments for and against it are similar to those made for or against licensing construction contractors where that issue has been under discussion elsewhere in the country.

Formalizing the determination of who is a responsible bidder doubtless would help in keeping construction work from being awarded to contractors who have not made a good record on earlier work for a city, but it also would tend to reduce the number of bidders. Contractors who have not previously done work for a city might also find it difficult to get a responsibility clearance. The end result would be to increase the already high cost of doing municipal work through a reduction in competition, and also by the added cost of administering a new agency. By setting up simple facilities in the construction agencies of a city for exchange of information on contractors, it should be possible to obtain the results sought without setting up a special control board.

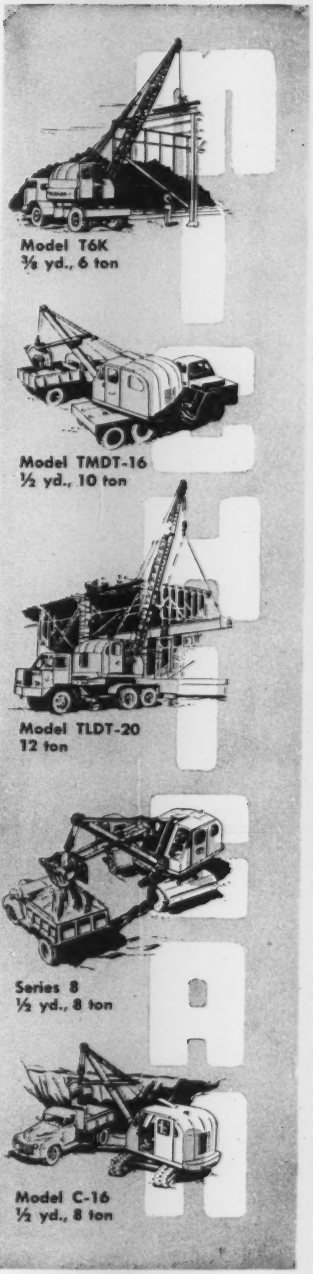
NAVAL YARD SEWAGE PROJECT . . .

Michigan Model C-16, ½ yd. clamshell, equipped with 30-inch crawler pads.

Construction of 4,500 feet of sewage lines to connect the Norfolk Naval Yard system with that of Portsmouth, Virginia, is being handled by A. G. Pinkston Company, Portsmouth. Trenches are 6 feet wide, 6 feet to 16 feet deep and carry 4-inch to 30-inch main and lateral pipe.

Three MICHIGAN Crawler Excavators and a MICHIGAN Truck Crane are working on the job. Their speed and handling ease are major factors in keeping the job moving on schedule. "With the MICHIGAN air controlled clutches we gain one to two bucket loads over every ten handled by other shovels. This adds 10%-15% to our daily production," states A. G. Pinkston, Jr.

Take a tip from contractors who know! When you need an excavator-crane . . . investigate MICHIGAN.



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NEW FACTORY-SEALED IDLER

TIMKEN® bearing equipped Continental idler can be re-lubricated

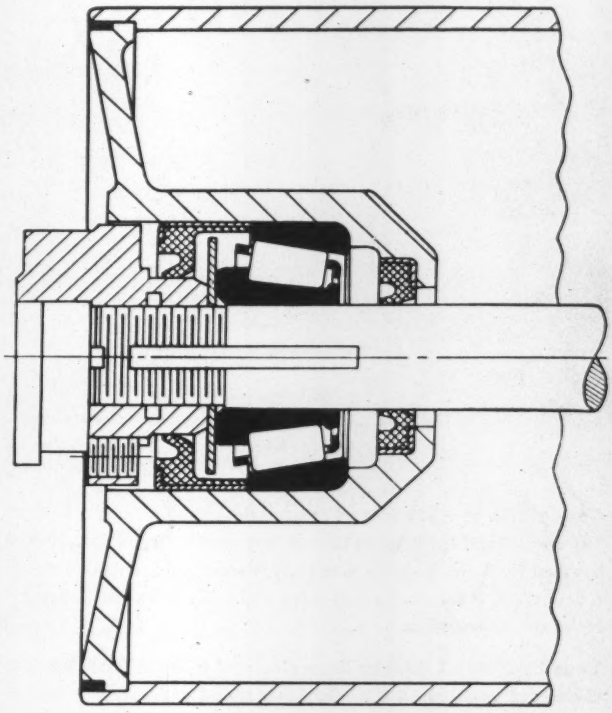
THE Continental Gin Company reports that its new type UST idler, lubricated and sealed at the factory, will stay in top operating condition for years at a time—*without re-lubrication!* Yet, should working conditions demand, it *can* be re-lubricated right on the job with the roll in place! Continental engineers say: "When seals or lubricant are no longer effective, the idler and bearings are still good! The entire unit can be disassembled, seal replaced if necessary, lubricant renewed, and put back in service to add still more years of trouble-free service to its operating life."

To insure long life and keep maintenance costs down, Continental specified Timken® tapered roller bearings for its new type UST idler. Because Timken bearings keep idler shafts concentric with housings, closures are made more effective. Lubricant is retained, dirt and moisture kept out. Operation is more economical.

Timken bearings have exceptional load-carrying capacity because of line contact between rollers and races. And due to their tapered construction, Timken bearings carry both radial and thrust loads in any combination.

Because of their true rolling motion and extremely smooth surface finish, Timken bearings reduce friction and wear. Idlers turn freely, easily. Belts last longer.

No other bearings give you all the advantages of Timken bearings. Specify them for the machines you build. Make sure they're in the machines you buy. Always look for the trademark "Timken" stamped on every bearing. The Timken Roller Bearing Company, Canton 6, Ohio. Canadian plant: St. Thomas, Ontario. Cable address: "TIMROSCO".



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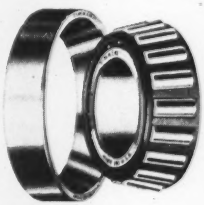

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